Coordinated Investigation of
Micronesian Anthropology
1947-1949

**Micronesians of Yap & Their Depopulation**

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CIMA REPORT No. 24.

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# MICRONESIANS OF YAP

# AND THEIR

# DEPOPULATION

Report of the Peabody Museum Expedition
to Yap Island, Micronesia

1947 - 1948

Peabody Museum, Harvard University
Cambridge, Massachusetts

## Preface

Early in 1947 a brief communique was circulated through a number of universities indicating that the Navy was interested in certain problems in Micronesia.

This group of islands, the former Japanese Mandate of the League of Nations, had been taken over by the United Nations and was to be administered by the United States Navy. Little correct information was available about the area, since it had been under the complete control of Japan after she had taken possession from Germany at the beginning of World War I. It was thought that some field work might be of value before an administrative program was completed.

This research, called the Coordinated Investigation of Micronesian Anthropology, was conducted by the National Research Council through its recently established Pacific Science Board. The Pacific Science Board was assisted by the Pacific Committee of the Anthropological Sciences of the Anthropology and Psychology Division of the Council.

The particular problem selected by the Department of Anthropology at Harvard was that of the depopulation of Yap Island. This phenomenon had been for years a source of interest and speculation to scientists and administrators. During the Japanese administration some research was conducted by medical men stationed there.

Four graduate students were chosen to go on the expedition. These were David M. Schneider and Nathaniel R. Kidder of the Department of Social Relations, together with Edward E. Hunt, Jr., and William D. Stevens of the Department of Anthropology. Mr. Kidder is a demographer, Mr. Hunt a physical anthropologist, and Mr. Schneider and Mr. Stevens are cultural anthropologists.

The expedition was jointly financed by the Office of Naval Research, Peabody Museum and the Laboratory of Social Relations at Harvard. In addition, the Navy Department furnished transportation by air and water, living quarters, and much necessary equipment.

The expedition received valuable assistance from a large number of people while it was operating in the field and during both the preliminary period of preparation and the subsequent study of the information and materials collected.

For their most valuable advice and help, special acknowledgment is made to the following persons:

Mr. Harold Coolidge, through the auspices of the Pacific Science Board, was most responsible for initiating the whole program of research.

In developing the project at Harvard, Professors Donald Scott, Carleton S. Coon, Earnest A. Hooton, Clyde K. M. Kluckhohn, Samuel A. Stouffer and Dr. Douglas A. Oliver selected the members of the expedition and acted as a joint board available for consultation on any problem. Upon Professor Scott's retirement, Professor John Otis Brew, his successor at Harvard, took over Professor Scott's duties as chairman of the consultation board. Dr. Oliver, as the specialist in Oceanic Ethnography, has been able to give much technical advice during all stages of the work.

Dr. John Useem talked to the group before it left for the field and, as a result of his long experience in the area, many problems were solved before they were encountered.

For valuable technical and material assistance we are indebted to Mr. Lyon Southworth, Manager of the Chemical Laboratories at Harvard.

For laboratory space and assistance, we wish to thank the staff of the Biological Laboratories at Harvard, particularly Mr. O. E. Sandusky, Associate Director, and Miss K. Andow, Executive Secretary.

For the use of the Statistics Laboratory, we wish to thank the Maxwell Graduate School at Syracuse University.

For valuable advice on nutrition and physical deterioration, we are especially indebted to Dr. Stanley Garn, Dr. Percy R. Howe and Dr. Howard M. Marjerison of Harvard, and Dr. Leon Schuman of the Tufts College Medical and Dental Schools.

Throughout the whole trip and during our stay on the Yap Islands, the Navy Department made every effort to supply all necessary material, advice and service. Among those men whom we have special reason to thank are: RADM. C. H. Wright, USN; CAPT. R. B. Randolph, USN; CDR. L. M. Duke, USNR; CDR. R. T. Gallemore, USNR; CDR. R. W. Kenney, USNR; CDR. R. Lintnecum, USNR; CDR. C. C. Stewart, USNR; LCDR. J. C. Spencer, USN; LTJG. K. M. Carroll, USNR; LTJG. E. C. Cowart, USNR; and LTJG. W. H. Weese, USNR.

During our research in Japan we received the fullest co-operation from SCAP. We are particularly indebted to the Civil Information and Education Section. Among the many C. I. and E. persons who were of assistance, we would like to particularly thank Lt. Col. D. R. Nugent, USMC, Chief of the C. I. and E. Section, and Mr. Joseph Trainer.

The Rev. Frederick C. Bailey, S. J., the missionary on Yap, was of great assistance throughout.

The sections of this report for which the members of the expedition are responsible are: Mr. David M. Schneider for the chapter on social organization and for ethnological field data scattered throughout the report; Mr. Nathaniel R. Kidder for demographic material wherever it appears and especially for the chapter: Formal Demographic Procedures and Findings. Mr. Edward E. Hunt, Jr. for the factors of physical degeneration and many biological factors as they appear throughout the manuscript, and for editing the report; and Mr. William D. Stevens for ethnographic material appearing throughout the several chapters and for organizing the report and writing the original draft.

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# I. INTRODUCTION

The problem to be dealt with in this report is why there are considerably fewer people living on Yap island now than there were in years past. There are many facts and concepts which need to be examined before any conclusions are drawn. That examination, along with sufficient background material, will constitute the bulk of this report.

To begin with, the Yap people have not simply moved away. This could not have constituted the major consideration over any long or short period of time. We shall have to determine whether there is something in the pattern of decline, as shown in the census figures, that might give a clue. The condition of food supply and nutritive patterns might be expected to furnish some clue. In the historic picture, the relevance of disease and medical care, as well as long range physical deterioration, must be considered. And in a geographic setting, it must be answered whether or not there are factors quite distinctive on Yap which contrast significantly with other parts of Micronesia.

In considering other factors operating on the birth rate, several more questions can be asked. Do the natives practice infacticide, or deliberately refuse to have children by whatever means are at their disposal? Are numerous pregnancies terminated by abortion before birth? Have conceptions been low because large percentages of the younger men left Yap for long periods of labor elsewhere? Is there evidence that the culture has been so disrupted that there is a psychosomatic inability to have children, so that the population is committing "unconscious" suicide?

All these considerations seemed somewhat likely on Yap after a relatively short survey. Some have proved more fruitful than others in the long run. The thesis to be presented here is that the depopulation has several causes and several aspects. More specifically, the hypothesis is as follows.

There is probably no environmental factor in the island itself, nor in the physical constitution of the people, which has caused them to decline in large numbers. The major consideration is the control of disease and the maintenance of health. The death rate in Yap is considered to have been very much a function of the prevalence of foreign diseases and the effectiveness of foreign public health measures among the islanders.

Although there were numerous men away from Yap at various times, working for the Japanese government, this factor is probably of no major importance.

In an aboriginal state, there was probably a moderate birth rate and a moderate death rate. The birth rate was maintained as such through mechanisms to be detailed later. The death rate was a function of a relatively healthy population in a healthful physical setting at that time. When the first traders and whalers came into Micronesia, there may have been some population decline or a very drastic one. In the absence of statistics, this question cannot be definitely established.

When the factor of cultural disruption is considered, it is thought that probably the island way of life was not seriously dislocated until the last few years of Japanese rule, when war was being threatened or waged. There is, and probably has been for years, a "ferment" for change involving conflict between progressive and conservative factions among the natives, but the result has usually led to activity that in itself could not readily be blamed as a cause for depopulation. Whether or not prolonged Japanese pressure caused more deliberate population control through the recognized methods available cannot be demonstrated in a concrete way by statistics, but this condition is indicated by the simple fact that if the death rate fell and the total population continued to decline, then the birth rate must have declined at a corresponding velocity. It is inconceivable that the death rate, in the times when whalers and traders were first coming into the area, should not have gone up, and that over the long period of medical work by the various foreign administrations on Yap, the death rate should not have been lowered to the phenomenally low level that is found today.

Present conditions indicate that the decline in population over the next decade will continue, but at a decreasing rate. Longer predictions are not feasible with the information at hand.

The basic thesis, then, is that an aboriginal condition, which can only be speculated upon, was thrown into a trend where deaths became more numerous and births decreased at a corresponding rate. The result of these processes was a relatively constant decline. It is postulated that the death rate has been altered through outside sources, and that the birth rate, artificially depressed by abortion, and for reasons to be detailed, has in the past several years probably risen to a higher level than at any time since aboriginal conditions prevailed in Yap.

## II. THE DEMOGRAPHIC SETTING

### A. A History of Yap

Before dealing with the more pertinent aspects of the depopulation as such, it will be well to give a sketch of the history of the discovery of Yap and some details as to the succession of various governments of the island. A useful source for this material is Muller (1917), pp. 1-6.

> The history of the discovery of Yap is still covered with obscurity. It is possible that Yap was discovered in the year 1526 by a ship sent out from Ternate by Don Jorge de Menezes, Captain of the Moluccas. The commander of the ship was Diego daRocha; its pilot was Gomez de Sequeira. The Sequeira Islands which they discovered, as the Spaniard Coello y Queasada concedes were probably Mogemog and Yap. The first Spaniard to enter the narrative is Alvaro de Sayavedra, who, on October 31, 1527, left the harbor of Siguantanejo in New Spain with the Moluccas as his goal and on January 1, 1528 reached the Mogemog Islands, which he gave the name of Los Reyes, departing on January 8.
>
> Ruy Lopez de Villalobos was greeted in 1543 on Fais, as well as on Yap, with the cry: "Buenos dias, matelotas." Whether this knowledge of Spanish was obtained from the shipwrecked members of former expeditions, or acquired in the Marianas, perhaps also in the Philippines, remains undecided.
>
> It does not seem likely, then, that Yap was first discovered in 1686 by the Admiral Lazeano.
>
> Pater Cantova is the first, in his letter to P. Daubenton of 1722, to give the island its native name of Yap, which he had heard spoken by Central Carolinians. Of all the names which have been assigned to it in the course of the centuries (Arrecifes, Carolina, Eap, Uap, Guap), this first one is also the best, and I have retained it not out of historical considerations alone.
>
> Yap is the familiar designation for the island throughout all the Central Carolines, while its inhabitants themselves call their land Uav. Eap and Uap are European inventions, corrupted reproductions of Central Carolinean and native words, respectively.
>
> Yap plays an insignificant role in the older travel literature. This literature has a peculiarity, in that the oldest and best ethnographic accounts, especially that of Cantova and above all that of Chamisso, are not based on personal observations, but on the accounts of foreign natives.

Not until the middle of the 19th century, with Cheyne, Tetens, and above all the loving and devoted work of Kubary, did a period of better knowledge of the life of the people of Yap begin. Although not a scientifically trained man, Kubary did more for the investigation of Micronesia than anyone else before or after him, up to the time of the Hamburg South Sea Expedition.

The first European settlement must have been founded by the beginning of the 19th century, if not somewhat earlier. The older natives still have a dim recollection of this.

That a frequent, if not always friendly traffic must have been established by European ships with Yap is reported by Cheyne. In 1836 two Manila ships, an armed brig with 50 Manila people and an armed schooner with 40 men, who had already been there in 1835 for trepang fishing, were attacked and the crew massacred by the inhabitants of the Tomil region. The schooner was attacked in the neighboring Mogemog group, the brig on Yap itself. Cheyne himself took on board a young Manila native, Lorio, who had been on such a Spanish ship, and had been kept in Tomil as a slave.

The first German trading station was a branch of the House of Godeffroy of Samoa, established in 1869.

The American captain, O'Keefe, was able to achieve a far more influential position. One fine day he appeared in Yap with a Chinese junk and brought about a revolution in the life of the people of Yap, for with his vessel he made possible their passage to the Palau Islands for the procurement of their stone money. According to the oral reports of old European settlers, his influence rose to the point where he presumed simply to deport undesirable natives to foreign islands. So much did he feel himself to be Lord of the Island, that he laid down a small private battery in front of his property, from which, down to the time of Spanish rule, a salute was fired for each of his incoming ships. Only after the beginning of German administration did this shooting nonsense come to an end.

The attempt of Germany to annex the Caroline Islands for the protection of her important trade interests led to the well-known conflict with Spain in 1885, which almost came to war, but then, through the mutually invoked arbitration of Leo XIII, ended with the acknowledgement of Spanish sovereignty, the establishment of a European administration, the simultaneous erection of a mission, and a consequent revolution in the conditions of life of the natives.

Not until June 30, 1899, by a treaty of purchase, did the Carolines group, together with the Marianas, pass out of Spanish and into German possession.

Thus, it seems that before 1886 there was only a loose claim which Spain had on Yap Island, together with Palau and other islands in the western Carolines. In the years previous to this, trade was slowly developing, with an occasional British station set up or ship coming to port. The Germans had opened a trading station on Yap.

These conditions had precipitated a series of diplomatic notes and near crises between Germany and Spain, finally resulting in a declaration of free trade throughout the area through Great Britain's siding with Germany and exerting pressure on the Spaniards.

From 1886 to 1899, Spain maintained a garrison on the islands and a government administrative agent. The principal effect was a certain amount of missionary activity, with sporadic conversions of natives by priests and monks of the Capuchin order. Most of the trade was taken over by Germans and Japanese; the economic benefits for Spain being insignificant.

Germany, at the end of the Spanish American war in 1899, bought the Caroline and Marianas islands, except for Guam, and immediately set up government administrative agencies on Yap. Here a hospital and physician were available and soon a native police force was in operation. The system of administration was patriarchial, and the Germans interfered as little as possible with local political and social traditions.

Six paramount chiefs on Yap were confirmed in office and made responsible for the administration of local affairs. The district officer met with the chiefs once a month, discussed problems, and explained policy, the information then being transferred to native subordinates.

Although they encountered difficulties in imposing their administration in the eastern Carolines, the Germans met practically no opposition on Yap, and little more in the other islands of the western Carolines.

Some evaluation of what they wanted to do, and how successful they were can be seen in the fact that there was never undue antagonism of the natives. There were some outbreaks on Palau from religious or political leaders, but a small show of force kept these from being serious. The main reasons for the peaceful imposition of German rule, however, was due to the personality of the natives concerned, and the non-interference with native custom wherever possible.

They worked for a general improvement of the area through road building, mapping and charting, and through the backing of various enterprises of the Capuchin missionaries. Natives were protected from unscrupulous traders through the forbidding of the extension of ruinous credit, while property and fishing rights were respected. They sought to correct evil, as they

saw it, by prohibiting sales of liquor, ending warfare, controlling sorcery, forbidding "prostitution" in the men's club houses, discouraging infanticide, and by encouraging migration from the poorer islands to Yap and Palau.

In matters of trade, policy was often somewhat dictatorial. Acreage increase of coconuts, care of groves, and regular accounting were demanded. On the whole, however, the German administration was moderate, enlightened, and efficient.

In October, 1914 a Japanese naval commander took control of the Carolines and set up an administrative system. Later that year the South Seas Defense Corps, with headquarters on Truk took over, and in 1915 Yap became one of the 6 districts established. Agreement was given by Russia and Great Britain. When the United States wanted later to make some change, it was relatively helpless.

Eventually a class C mandate system was established, requiring the Japanese to promote material and moral well being and attempt the social progress of the natives. They had to prohibit slavery or forced labor, control traffic in arms, exclude alcohol, refrain from building military bases or fortifications, permit freedom of worship and missionary activity, and submit an annual report to the League of Nations.

America's interests centered about cable and radio rights. In 1921 Japanese armed forces were withdrawn from the islands in general and the South Seas Government, a civilian administration, was put in charge. The Yap branch government was in charge of islands from Pikelot in the east to Ngulu in the west.

The principle objectives of the Spanish administration had been religious proselytism, and that of the Germans, commercial expansion. The primary ends of the Japanese policy were political and military, and this was the only nation which contemplated a substantial emigration from the homeland. Native authority was restricted and foreign trade quietly discouraged. Political factors again became important, with almost complete lack of clarity in the discussions. All pretense of innocence in military ambition was finally dropped after 1938, and reports were no longer sent to the League.

From that time onward, Yap was more and more thoroughly drawn into the war machine. The Yap people were forced to work on farms, at shipping, in the making of military installations and air strips. During the actual days of fighting, Yap was bombed by our planes enough to destroy most of Colonia. A full scale invasion was not necessary for its capture as had been anticipated. Our navy just sailed in and has been there ever since.

## B. Population in the Pacific

The depopulation of Yap is not a unique phenomenon. Population declines have been noted repeatedly over wide areas of the world, and their causes have been studied and reported on extensively. This literature has not often shed much light on the processes involved, however. Since this report is not intended to be a broad comparative survey, it is sufficient to note a few of the major references to this problem merely to give a slight orientation in the breadth and range of answers which have come forth to the question of why populations diminish and sometimes die.

A general summary of older and current ideas on this subject are contained in Roberts (1927), especially in the islands of the Pacific. The range of areas covered is wide, being exceeded only by the diversity of viewpoints as to the etiology of the condition in any one region.

Roberts found two viewpoints prevalent. One was that the natives would inevitably die out. A more recent view, taken by colonial administrations, is that total depopulation is not inevitable. There is also the question of how much decline had taken place before the Europeans came along, and how much afterward.

There were many instances of decline of population before Europeans came. The Bamu River natives were decreasing because their families were limited to one child; the Solomon Islanders were dwindling before warfare and New Georgian raids; the Engamo (Batads) of the Dutch East Indies and the natives of Yap because of "abortion and low morals."

Several keen observers such as De Bovis, Lorimer Fison, P. Deschanel and others believed in a general decline and that the Europeans served only to provide a favorable environment for the germs of death that were already there.

There were many reasons for the decline, one being a "general racial decline." This was due to a cessation of exploration and hardship, together with a continual sitting about in idle luxury. Life was given up to a round of pleasure that sapped all will power. The stamina was gone from the race and, denied the health giving process of selection and struggle, it was declining.

This general lassitude made epidemics more terrible. In pre-white days epidemics were known: the kau okuu of 1807 in Hawaii was not the first disease of its kind; the skin eruption rewharewha swept away half the north island of New Zealand before Europeans came.

Epidemics occured in Aneityum in the New Hebrides before missionaries arrived and the first explorers found numbers of deserted village sites in Efate.

De Quatrefages and Rollet said that syphilis was present before Europeans came and that it was found in untouched regions of New Guinea. Ill nourishment and lack of sanitation predisposed them to epidemics and high infant mortality. Abortion and infanticide were prevalent, missionaries in Tahiti estimating that two-thirds of all babies were strangled and that one woman had murdered 13 babies. Lack of good care accounted for many others.

The birth rate was affected by the decline in morals and there was a giving over to pleasure and immoral practices from Yap to the Marquesas. Cook, writing of Tahitian immorality, said that there was a scale of dissolute sensuality to which these people had descended that would be hard for the imagination to conceive. The breakdown of morals was not entirely due to European causes.

Europeans came into this system and the results, rather than confirming ideas about the native paradise, according to Waterhouse's account of the Gilberts, gave the sensation of living in a madhouse with different wards at war with each other.

If, however, Europeans did not start the deline, they vastly accelerated it. Investigators previous to the time of W.H.R. Rivers sought the answer in physical disease. For example, it was stated in 1862 that in Hawaii syphilis alone could have caused the decline. Among French investigators, Cuzent blamed wars, leprosy, drunkenness, unbridled debauchery and syphilis. Numerous others followed his opinion.

In Melanesia, similar opinions were held by Bougard. In Fiji, the Commission on Fijian depopulation in 1893 enumerated a large number of physical causes.

It was not until the writings of Dr. Litton Forbes that the dual causes of physical and psychological mechanisms was stressed, calling attention to the great unsettling of the native mind which almost eludes all accurate analysis. The English psychologists pushed it from then on. This material is treated under three headings: changed way of life and thought; a psychological inertia or despair, based on native faiths and interests having been destroyed with nothing having been returned as a substitute; and physical weakness, manifest in disease.

In the first of these, economic change alone was enough -- iron weapons, kerosene lamps, clothing, etc. The introduction of firearms effected a profound transformation, causing a sale of best lands and eventual retreat to the swamps or mountains to get money for their purchase. The change-over in means of warfare led to a destruction that lasted from the sixties in New Zealand to 1899 in Malicita. New Zealand gives the most striking examples, but Fiji, Samoa, Tonga, and Tahiti were affected through many long years of guerrilla warfare.

Penetrating the Solomons and New Hebrides, inter-tribal warfare between mountain and coast dwellers was intensified. Labor of all kinds, ceremonial life, abnormal loss of life, all accelerated the decline, hastening the dissolution of traditional patterns. That is to say, the old arts were essentially forgotten. This was accompanied by a decay of the working spirit and probably gave rise to the impression that islanders were lazy. It was in fact a loss of incentive or changed emphasis, where iron tools lessened the time for work, war was not permitted, and sale of land could purchase what used to have to be made by hand.

There was little moderation in change. As Parkinson noted in New Guinea, a native rapidly came to consider his immediate ancestors as stone age men. It was an all-or-none abandonment of custom, compressing centuries of evolution into a year's change.

Thus, in Hawaii, discus throwing and dart glancing, controls on sexual license in Fiji, the rule of old men in Melanesia, and the social control of chiefs in Polynesia were abandoned. In New Caledonia a chief smuggled out the skulls of his ancestors for sale. The good went with the bad and a survey of the world indicates that a people without a past must die. The Oceanic native had neither the old nor the new and simply gave way.

Custom was the unquestioned base for the old days in Polynesia, and a great part of the necessary control was based on Tapu, with direful consequences for the violator. Europeans came and were not affected. This result was noted by the natives and disregard for the custom followed inevitably. The islander became, for all practical purposes, an atheist. Examples could be found for this same condition throughout many other parts of the world. The change from matrilineal to patrilineal descent in Fiji, the weakening of social traditions in the Trobriands, the decay of totemic traditions in New Caledonia and the breach of the clan system in New Guinea are simply further examples.

The psychological despair is emphasized by Rivers. He seemed to think that the enormous influence of mind upon body among lowly peoples was the basic cause of depopulation. Stevenson thought that a change in habit can be bloodier than a bombardment and that an incapacity to keep abreast of change produced a lethargy of despair. The will to live was lacking for the native who could not see how he or his children could get along in the changed condition.

In the minds of Melanesians and Polynesians alike, this psychological despair is found, which has curiously defied western doctors, and which is like a delusional melancholia with the body wasting away. The native, with his mind made up to die, forces his body to follow and this dramatic protest of the islander against civilization can be seen in depopulation. There is a drifting and despair among new ideas and nomenclature, with religion, clan, tribe and pride all gone, leaving the native feeling that he too has but to pass on.

The physical causes are very much the same as the ones just above, and need no further treatment here. Roberts summarizes his attitude in this manner.

One may say that the physical causes were contributory to the wider psychological ones, or agencies through which the latter worked. But the root of the matter lay with that curious despair which dominated the native mind and colored his actions and thoughts. Under these conditions, depopulation is easy to understand but difficult to allay.

Now Roberts' material has been summarized. In view of its coverage of a long period of years before psychosomatic medicine was even formalized, it is interesting to see the social and psychological factors so fully speculated upon. Yet it is very disappointing to see what little really emerges from it that is of any scientific value. This vague "wearing out of the racial quality," the substitution of iron tools for the old hand-crafted ones, the taking away of old ways with no acceptable substitution, all must in some way contribute to the generalized uneasiness, anxiety, or unhappiness of a group. The means by which these conditions affect fertility, however, is entirely unclear unless one is willing to resort to the most tenuous concepts of psychosomatic medicine.

One other man, Baker, (1928) as a preliminary to dealing with the depopulation in Espiritu Santo, New Hebrides, summarizes the causes that have been suggested as the basis for depopulation, and on which work has been done. These can be profitably listed illustrating the main topic headings under which thought along this line has been channeled.

Apathy due to loss of old customs.
Loss of power by chiefs.
Lassitude due to abundance of food.
Inter-tribal wars.
Lack of selection.
Firearms.
Recruiting.
Endemic diseases.
Introduced diseases.
Lack of hygiene.
Breaking down of primitive quarantine barriers.
European clothing.
Unnatural sexual practices.
Too close intermarriage.
Ill-treatment of women.
Female sterility.
Abortion.
Infant mortality.
Infanticide.
High sex-ratio.
Cannibalism.
Tinned meats.
Alcohol.
Drugs.
Lack of education.

Baker treats each of these in a rather perfunctory manner and concludes that while there may have been some depopulation phenomena dependent on many of these, that in his region at least, only introduced diseases plus abortion with a possible contribution from a high sex ratio in one region, are responsible.

These two writers do pretty well summarize the literature which, as it is gone through journal article at a time, is the same relatively depressing rehash of disease, or psychological despair. Each island seems to have its own reasons for decreasing which is probably the case, but little light is thrown on any of the processes involved. In summary the literature on the subject is not far from being completely worthless, mainly because in any study there are not enough data presented to allow for a determination as to whether or not the supposition involved is at all reasonable.

The next step is logically to go from the general situation about Oceania to examine the concrete demographic picture as it existed in the past, and exists today on Yap Island. The following is a description of our formal demographic investigation on Yap and the relationship of the findings of this investigation to the depopulation.

## C. Formal Demographic Procedures and Findings

In our analysis of our demographic findings we shall make comparisons involving sex and age structure and various demographic rates. The reliability of our data and the validity of our conclusions is a function of our research method and techniques. Fisher (1941) and others have developed ingenious procedures for testing the significance of differences in samples and populations. We shall employ some of these procedures in the analysis and interpretation of our data. The underlying assumption in all of these procedures is that the raw numerical data with which the researcher is working is accurate. The accuracy of our raw numerical data on Yap is a function of the method and techniques we employed in gathering this data.

In developing our method of investigation in Yap we drew on the experience of two broad fields of scientific investigation: ethnography and demography. From ethnography we drew techniques for gathering accurate information in a culture which is usually very different from that of the investigator, techniques developed by social anthropologists through their many field investigations.

From demography we drew techniques for gathering quantitative population data; techniques developed by demographers during their many census takings and vital statistics investigations.

From both ethnography and demography we drew techniques for analyzing and interpreting the data.

The combination of these techniques we call demographic method with the understanding that it is a subdivision of a broader category of method called ethnographic method.

The method we used in Yap we adapted to certain peculiarities of Yap culture and environment.

Demographic data have previously been gathered in primitive societies. However, the numerical data needed for any sort of advanced demographic analysis is either missing, highly inaccurate, or was gathered at a tremendous expense. In the British, French, and German colonies, in most cases, the administrators neither asked the pertinent questions nor made any attempt to verify the answers given.[1] The Japanese used their extensive police system to gather demographic statistics. They asked pertinent questions and used fairly sophisticated procedures. Unfortunately, for most purposes, the demographic area used was one encompassing several groups of islands. Nothing as small as Yap was considered large enough to have its own demographic analysis. However, we were very fortunate in having access to some of the raw, unprocessed Japanese data on Yap.

In our investigations on Yap we asked questions which were, in terms of ethnographic and demographic theory, pertinent. In order to make sure we were obtaining accurate quantitative data we developed techniques which were a function of the smallness and isolation of the population and the peculiarities of Yap culture and environment.

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1. See Kuczynski (1939)

In describing our field techniques we shall touch on aspects of the Yap setting gone into much more extensively in other parts of this report. Particular attention is called to section "III C" on social organization.

Yap is small. The total land area is thirty-eight square miles. The total Carolinian population on 31 July 1948 was 2,625.

Yap is isolated. There is virtually no emigration or immigration of Carolinian population under the American administration. External migration is limited to a very few young adults who go elsewhere for teacher, nursing, or medical training and return at the completion of their course.

In the past there was much more external migration. Many residents of the districts of Gurror and Gagil have feudal ties with lands and peoples in the eastern atolls and frequently made extended visits there. Many of the people from these atolls made visits to Yap. There was a slight amount of intermarriage between atoll women and Yap men. In all of these cases the married couple settled on Yap and the women became integrated into Yap culture.

Under the German, and particularly under the Japanese administration, great numbers of Yap men were used in commercial enterprises in other parts of Micronesia. Many were used in the phosphate development of Angaur in the Palau group.

However, under the American administration, virtually all of the men from Angaur and elsewhere have been returned to Yap. During the time of our census taking no Yaps were on extended visits to the atolls. The very few atoll people visiting Yap were noted but were not included in the census proper. The atoll women with Yap husbands were included and their atoll origin was noted on the census schedule.

Yap is also isolated in another sense in that there is virtually no demographic admixture between members of the Carolinian and members of the other ethnic groups on the island. The Chamorros and the Yaps mutually despised each other. Our census revealed less than a dozen cases of Yap-Chamorro intermarriage. When we interviewed the former Japanese governor of Yap, Kotaro Sakakida, now living in Akita Ken in northern Honshu island, he told us only three marriages took place between Yap Carolinian women and Japanese men. These three women now live with their husbands in Japan. One Okinawa woman is married to a Yap man. She lives with her husband in a Yap village. Her way of life is more Yap-like than Japanese.

In the census we obtained a schedule for each individual Yap. Our schedule unit was not the Yap family, or household, but the individual. The following information was gathered from each individual:

1. Village of birth.
2. Present village of residence.
3. Name.
4. Sex.
5. Year of birth.

6. Age grade.
7. Total number of spouses (past and present).
8. Present number of spouses.
9. Name of present spouse(s).
10. Number of years married to present spouse(s).
11. Age grade of individual and spouse(s) at time of marriage.
12. Present village of spouse(s).
13. Whether or not living with present spouse(s).
14. Number of past spouses who died.
    For each deceased spouse: (Q. 15 thru 19)
15. Name of deceased spouse.
16. Year spouse died.
17. Number of years married to spouse.
18. Age grade of individual and spouse at time of marriage.
19. Whether or not individual divorced spouse before spouse died.
20. Number of spouses divorced.
    For each divorced spouse: (A. 21 thru 24)
21. Name of divorced spouse.
22. Year spouse died (if now deceased) or present village.
23. Number of years individual was married to spouse.
24. Age grade of individual and spouse at time of marriage.
25. Was individual adopted?
    If adopted: (Q. 26 thru 29)
26. Name of adopting father.
27. Year he died (if deceased) or present village.
28. Name of adopting mother.
29. Year she died (if deceased) or present village.
30. Name of real father.
31. Year he died (if deceased) or present village.
32. Name of real mother.
33. Year she died (if deceased) or present village.
    For men: (Q. 34 thru 40)
34. Number of real children man has had.
    For each child: (Q. 35 thru 40)
35. Name of child.
36. Sex of child.
37. Year child was born.
38. Year child died (if deceased) or present village.
39. Name of mother of child.
40. Whether or not child was adopted out.
    For women: (Q. 41 thru 44)
41. Number of pregnancies woman has had.
    For each pregnancy: (Q. 42 thru 44)
42. Outcome of pregnancy: (live birth, multiple birth, stillbirth, or abortion).
43. For each live birth the same information as was gathered from the men including the name of the other parent.
44. In cases of reproductive wastage the number of menstrual periods missed, before issue, was ascertained. Also, if possible, the sex of the issue.
45. How many children did the individual adopt?
    For each adopted child: (Q. 46 thru 49)
46. Name of adopted child.
47. Year child was born.

48. Year died (if deceased) or present village.
49. Sex of child.
50. Occupation of the individual during the Japanese administration.
51. Present occupation of the individual.
52. Exactly at what times during his life was the individual away from Yap, and where did he go?
53. Is the individual a Christian or not?
54. How many Ngeyal (whole and half siblings with a common maternal parent) has the individual had?

For each ngeyal: (Q. 55 thru 57)

55. Name of ngeyal.
56. Sex of ngeyal.
57. Year ngeyal died (if deceased) or present village.
58. From whom was this information obtained.
59. Name of the census taker.

Some of the census questions call for further amplification:

With regard to the first two questions: We meant the village of the tabinauw (patrilocal extended family) into which the individual was born. If the individual had been born in the hospital the answer to the first question was not "hospital" or "Yaptown" but the village of his tabinauw of orientation. In question two we were referring to the village of the individual's present tabinauw. These first two questions were inserted for several reasons: (1) We wanted a census of each political unit down to the village level. (2) Question 2 in conjunction with questions 3 and 4 served to identify the individual schedule. In our IBM coding each schedule was coded as follows: The first digit indicates the district; the second digit the social class of the village (with less than half a dozen exceptions in all of Yap all the members of all the tabinauws in any given village are of the same social class); the third digit was for a more specific village identification in case there was more than one village of a given social class in any particular district. Thus, in the village list (see next page) Rang is tethiban village number one in the district of Gilifith. Rumu is tethiban village number two. This does not imply that Rumu is inferior to Rang. It is purely a matter of alphabetical arrangement. The fourth digit indicates the sex of the individual (1 indicates male, 0 female). The fifth and sixth digits combine to indicate the individual's number amongst his sex in the village. Thus: the first female, alphabetically, in our census of Gachapar, Gagil is Be'emile. Her code number is 111001.

(3) Because of the relationship referred to above, between village and social class, in taking a village census we automatically took a census of social class.

(4) By comparing answers 1 and 2 we can obtain information on geographical and social class migration. We can particularly check cross class marriages by comparing class at birth with present class of married women in a society with patrilocal residence.

In the following village listing the classes are listed from the highest: bilche to the lowest: melingai ni kan.

## Occupied Villages of Yap

| Gagil - 1 | |
|---|---|
| Amun | 141 |
| Binau | 181 |
| Darcha | 191 |
| Gachapar | 111 |
| Guchol | 171 |
| Lebinau | 151 |
| Leng | 142 |
| Makiy | 161 |
| Mei | 182 |
| Murru | 192 |
| Myyub | 183 |
| Riken | 152 |
| Tenfar | 172 |
| Wonean | 131 |

| Map - 2 | |
|---|---|
| Bechiyel | 251 |
| Chool | 241 |
| Malon | 252 |
| Mecheu | 281 |
| Nulul | 282 |
| Numudul | 291 |
| Omin | 231 |
| Pelau | 253 |
| Talangith | 254 |
| Toru | 232 |
| Weloi | 255 |
| Wocholob | 242 |
| Woned | 233 |
| Wurila | 256 |

| Rumung - 3 | |
|---|---|
| Biluol | 353 |
| Fal | 331 |
| Ganuun | 351 |
| Mechool | 352 |
| Riy | 332 |
| Wenfara | 371 |

| Tomil - 4 | |
|---|---|
| Aff | 451 |
| Bugol | 421 |
| Deboch | 471 |
| Dechumur | 452 |
| Dilog | 475 |
| Domechui | 472 |

| Tomil (cont'd) | |
|---|---|
| Garagei | 453 |
| Maa | 431 |
| Merur | 422 |
| Modalai | 473 |
| Teb | 411 |
| Thol | 474 |

| Rul - 5 | |
|---|---|
| Balabat | 521 |
| Benek | 571 |
| Darikan | 591 |
| Dachangar | 551 |
| Dulukan | 541 |
| Gitam | 572 |
| Inuf | 561 |
| Lamer | 542 |
| Frigau | 573 |
| Lei | 531 |
| Luech | 552 |
| Ngariy | 553 |
| Ngof | 532 |
| Ngolok | 511 |
| Tabinify | 562 |
| Talangu | 563 |
| Worowa | 554 |

| Gilifith - 6 | |
|---|---|
| Airech | 671 |
| Atiliu | 631 |
| Gilifith | 611 |
| Gurung | 643 |
| Malowai | 661 |
| Rang | 641 |
| Rumu | 642 |
| Run'nu | 632 |
| Tabelang | 681 |
| Tafgif | 651 |
| Ulu | 662 |
| Yin | 633 |

| Okau - 7 | |
|---|---|
| Adibue | 751 |
| Alog | 761 |
| Dugor | 731 |
| Kedai | 752 |
| Keng | 762 |

| Okau (cont'd) | |
|---|---|
| Mabu | 763 |
| Mulro | 764 |
| Nimar | 765 |
| Numunung | 791 |
| Okau | 711 |

| Kanif - 8 | |
|---|---|
| Aringel | 851 |
| Binau | 871 |
| Fedior | 872 |
| Kanif | 811 |
| Magaf | 852 |
| Tagegen | 853 |
| Yaboch | 873 |

| Nif - 9 | |
|---|---|
| Fara | 951 |
| Gal | 921 |
| Malai | 941 |
| Nel | 971 |
| Nif | 911 |
| Tafunith | 961 |

| Guror - 0 | |
|---|---|
| Anoth | 021 |
| Gachalau | 071 |
| Guror | 011 |
| Magachagil | 061 |
| Thabeth | 041 |
| Towai | 051 |

| Social Class | |
|---|---|
| Bilche | 1 |
| Ulun | 2 |
| Metheban | 3 |
| Tetheban | 4 |
| Daworchig | 5 |
| Melingai ni arou | 6 |
| Pimilingai | 7 |
| Yagug | 8 |
| Melingai ni kan | 9 |

The first digit indicates district and the second social class.

Question 5 is gone over in the discussion of age below. Question 6 was inserted for various reasons: (1) We wished to investigate the relationship, if any, between actual age and age grade. Also between age grade and other variables measured in our census. Male age grade in rural Ireland, for instance, is largely a function of marital status. We wished to discover whether or not any such relationship existed on Yap. We found variations in the age grade system in different parts of Yap. (2) Females have an abrupt change in age grade, from buliel to rugoth (see table below),[1] at the onset of menarche. The demographic data on age and age grade is used in the analysis of the physical anthropological data to determine the arithmetic mean age of menarche.

Questions 7 thru 24 were inserted for general ethnographic investigation. By comparing the answers to these questions with the answers to questions 39 and 43 we were able to investigate the relationship between marital stability and fertility. (We soon realized Yap had a very high divorce rate. Does a woman's divorce rate go down after she has borne a child?). We obtained very inaccurate answers to questions 10, 17, and 23. Occasionally we obtained an exact answer to 10 because we had a Japanese record of the marriage. When the data came from some such accurate source we noted that fact on the schedule. In general we divided this data into three categories: less than one year, one to five years, over five years. Our hypothesis was that if a marriage lasted over five years it was very unlikely to end in a divorce.

The data on age grade was called for to check our hypothesis that child marriages almost always ended in divorce.

These questions in conjunction with question 5 gave us gross data on the number of Yap women of reproductive age who had never been married, or who had only been married one year, etc. In rural Ireland the relatively low birthrate is due to few and late marriages. In other areas of the world there is a low birthrate even though almost all of the women of the reproductive ages are married. We wanted to know where Yap fitted into this picture.

The questions relating to adoption were put in mainly to gather general ethnographic data. From the answers to these questions we obtained a wealth of information on the relationship between adoption and the overall social structure. Many places we could use the census data to check actual situations against ideal situations which the ethnographers proper gathered from their informants. Thus, according to the ideal (see the section on social organization) first offspring are never put out for adoption. According to the census first offspring are very seldom put out for adoption.

By comparing the answers to questions 26 through 29 with the answers to questions 30 through 33 we could investigate such things as whether adoption was usually exogamous or endogamous to the tabinauw, village, district, social class, etc. By comparing the answers to questions 34 through 40 with the answers to questions 45 through 49 we could gain knowledge about the fertility of those who adopted children. By

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comparing 45 through 49 with the rest of the census information we could obtain much ethnographic data on the general ethnographic characteristics of those who did and those who did not adopt children.

Questions 34 through 44, particularly 43 and 44, give us a wealth of information on Yap reproductive behavior. We have already mentioned the relationship between fertility and marital status and stability. We obtained information on the actual number of pregnancies each Yap woman had had and the termination of each of these pregnancies. We obtained information concerning the relationships between different pregnancy terminations and such variables as litter size, birth order, age of mother, age of father, patterning of birth or pregnancy spacing, etc.

It can be assumed that the one place our information was poor here was with regard to the data on induced abortions. There is good reason to believe the induced abortion rate is quite high on Yap, and even better reason to believe this high rate would never be directly revealed in a census. By its very nature a census cannot gather quantitative data directly on the violation of cultural taboos. It also cannot gather data on activities which are not themselves taboo qua activity but which are taboo on a verbal level. E.g. menstruation is not a taboo activity in our culture but is a taboo subject for social discussion.

A word about question 44. Menstruation is such an important happening and such a relatively freely discussed phenomena in Yap that women are particularly aware of the fact when they miss a menstrual period. The whole neighborhood is apt to be aware of the fact. Using the standard ethnographic methods of cross checking, which we detail below, we obtained a high degree of agreement as to the number of missed menstrual periods preceding some form of reproductive wastage.

By comparing the answers to questions 34 thru 44 with the answers to the other census questions we could compare reproductive behavior on the somatic level with reproductive behavior on the social and cultural levels. We found that although the Yaps would not be apt to report an induced abortion they had no hesitancy about reporting an illegitimate child.

Questions 50 and 51 proved to be rather unsatisfactory. Yap is not a society, like ours, in which status is so very much a function of the occupation of the mature adult male. Question 50 on conjunction with question 52 did give us information as to the number of Yaps who had worked in the phosphate industry at Angaur. With regard to occupation, question 52 proved more valuable than the preceding two questions.

In the ideal answer to question 52 the individual would state the exact date of his departure from Yap, where he went, what he did there, and exactly when he returned for each time he had left Yap. In only a very few cases was our information this exact. We did obtain information about the number of times the individual had left Yap and about the places he went. But the information on duration of time could at best be grouped into a very few, very broad categories.

The Japanese kept records concerning all of the Yap external migration during their administration. They issued quasi passports and had

detailed information in conjunction with them. While in Japan we spent much of our time in pursuit of these records. Our results were positive only in the sense that we positively determined that the records no longer exist. In Tokyo we interviewed the Japanese official who had been in charge of these records in Yaptown. He told us he had personally supervised the burning of all of those records immediately before the American occupation.

He also told us he regularly sent copies of his records to Korror, Palau Is. We investigated and found that the records there had met the same fate as the records on Yap. The Korror officials told us they had sent copies of much of this on to the South Seas Government Office in Tokyo. This whole building was burned down in one of our fire raids.

We interviewed many Japanese who had formerly been officials on Yap. We hoped some private copies of some of these records might have survived the war. Some of these individuals offered us their extensive diaries but investigation revealed that the diaries contained none of the detailed information we were after.

We did obtain much valuable information in Japan the substance of which will be found all through this report. We had the complete co-operation of the SCAP and Japanese officials in our quest. Unfortunately, with regard to quantitative information on Yap external migration during the period of Japanese administration we drew a blank.

With regard to question 53: We had no difficulty ascertaining whether or not any given individual was a Christian.

Questions 54 thru 57: Ngeyal literally means "One Belly" and refers to whole or half siblings with a common maternal parent. They all come from one belly or womb.

As in every census some of the information was obtained from someone other than the individual concerned. Usually this was a close relative, or the village chief, etc. Question 58 was inserted so that we would know exactly who the informant had been. The reliability and validity of the information obtained was obviously a function of the answer to this question.

Question 59 allowed us to identify the particular census taker. In the case of incomplete or suspect information this was of great value.

In taking the census we went from village to village. There was no enumeration day for all of Yap. There was an enumeration day for each particular village. With only one or two exceptions we never used more than one day to take the census of one village. With smaller villages we would often enumerate two or more in one day. The only time the census taking of a village extended into the next day was when we had underestimated the size of one of the "smaller" villages. After completing the census of a really small village we would begin that of another one. However, sometimes the second "small" village turned out to be quite large. Then we would complete its census the following day.

In every census there is the danger of underenumeration. In an area in which sub-areas have a series of enumeration days there is great danger of both under and double enumeration due to migration during the overall time of census taking.

Due to the isolation of the population we did not have to worry about external migration. Due to the smallness of the population we were able to set up checking devices based on the structure of Yap social organization which would minimize the possibility of either double or under enumeration.

We used two features of the social organization in setting up our primary check lists: the system of age grading and the organization of the family. While the enumerators were taking the census of a particular village we would obtain, in conference with a group of the villagers, first a list of each person in the village falling into each of the sex and age grade categories. For example: we would first ask for the name of each pilibithir ni pumoon (see table below) in the village, then the name of each pumoon, etc.

There are six male and seven female age grades in Yap:

| Yap Male Age Grade | Approximate American Equivalent |
|---|---|
| bitir ni pumoon | baby boy |
| sarapagal | boy |
| gapalapal | adolescent boy |
| kofor | young adult man |
| pumoon | middle aged man |
| pilibithir ni pumoon | old man |

| Yap Female Age Grade | Approximate American Equivalent |
|---|---|
| bitir ni pin | baby girl |
| buliel | girl (pre menarche) |
| rugoth | girl (post menarche) and young woman |
| dien | woman (roughly age 35 to 45) |
| lukanaro | middle aged woman (during menopause) |
| pueluol | middle aged woman (post menopause) |
| pilibithir ni pin | old woman |

Though the change in age grade for each individual does not come at the same age in Yap the change is a very definite one. A male might change from gapalapal to kofor anywhere from age 16 to age 25. However, once the change was made it was ever-recognized and was irreversible. This change is more comparable to receiving a B.A. or B.S. degree than to becoming 21 in America.

We found some geographical differences in age grading in Yap. In Gagil and Map the age grade dien is not used. In Gagil and Map we found some of the women in their late thirties were lukanaro, others were rugoth; in the other parts of Yap women of this age were dien.

In Gagil the age grade sarapagal is not used. We found that a boy remained bitir ni pumoon longer in Gagil than elsewhere. He became gapalapal at an earlier age in Gagil. The change to kofor came at about the same age in Gagil as elsewhere.

In all village ceremonies, feasts, dances, etc., macroscopic differences in role and status are, to a very large extent, determined by age grade. The Yaps are particularly aware of which of the fellow villagers occupy which age grade.

Our other primary check list was based on family organization. This list was categorized according to tabinauw (patrilocal extended family). Never concurrently with, and from a somewhat different group of informants than the ones who had provided us with the age grade list, we would obtain the name of each head of tabinauw in the village. Then we would obtain the name, sex, and age grade of each member of each tabinauw.

Before leaving the village we would cross check our two lists and check these against the incoming schedules. All discrepancies would be ironed out before we left the village.

We also had secondary check lists which were derived from the census schedules. In questions 12, 22, 27, 29, 31, 33, 38, 43, 48, and 57 we asked for the present village of various living relatives of the individual. Then we cross checked to make sure we had a schedule for each of these relatives and also to make sure that common information on each of the two schedules was in agreement. An example of the latter: We found a sarapagal in Guror who was residing in the tabinauw of his adopting father. According to question 33 his real mother was living in a village in Gagil. We cross checked to make sure that the information with regard to his birthdate given in answer to question 5 on his schedule agreed with the information with regard to his birthdate given in answer to question 43 on his mother's schedule.

If we had not yet taken a census of the village referred to in the answers to questions 12, 22, 27, etc. supra, we would place the name of the relative on the loose ends list for that village and then would check when we arrived there.

This secondary cross checking was carried on back at our camp in the evening while we were making typewritten copies, in coded form, of each of the schedules gathered that day. Our camp was always in the heart of the village of the chief of the particular district in which we happened to be working. We had the only gasoline lantern in the district. That factor, in combination with many others, made our campsite the main village social center. All evening long anywhere from ten to two dozen Yaps of both sexes would be squatting about our camp chewing beetle nut, smoking our cigarettes, exchanging the latest gossip, etc.

Districts have from 150 to 400 people in them. Almost everyone knows everyone else's business. While we were doing our typing we would constantly fire questions into the crowd concerning the information that had been gathered on the schedules that day. This way we caught a few errors and straightened out many discrepancies.

We had anticipated a great deal of trouble in gathering data with respect to age. Many Yap natives do not seem to understand the concept of age. For example: in the spring of 1948 the chief of one of the Yap districts told us most emphatically that he was forty-four years of age. We questioned the chief as to how he could be so certain he was forty-four. He took from his basket an identification card giving his name and stating that he was a Yap islander, age forty-four. It was signed by Lt. John Useem, USNR, Commanding Officer, Angaur Island, and was dated four years earlier. So far as the chief was concerned he would be age forty-four for the rest of his life.

Fortunately we had other very good evidence which supported John Useem's estimate of the chief's age. By far the most valuable evidence we had with regard to Yap ages was the data we obtained from Japanese police records. These primary records, which fell almost completely intact into our hands, include the date of all births, deaths, and some marriages which occurred on Yap between 1914 and 1945. The records, unfortunately, were not completely intact. Occasionally a page was partially or completely torn out and lost. In such cases we fell back on other aging devices described below. We also used these other devices to check the accuracy of the Japanese data.

We also found Japanese estimates of the birthdate of all living Yaps born before 1914. For children who were children or adolescents in 1914 the Japanese were not apt to be very far off in estimates of the year of birth. The Japanese were well aware of the age grading system and used it in conjunction with other methods similar to ours to establish the birth date of the born pre 1914 Yaps. Certainly their estimates made between 1914 and 1920, estimates of the birth date of Yaps born before 1914, were much better than any rough estimates we could make, without their data, in 1947 or 1948. This means that we have exceptionally accurate data on the ages of all Yaps through the end of reproductive ages.

To check further with the above mentioned chief we asked him: "Uin garagel?" which means in Yap: "When were you born?". He replied in Japanese: "Meiji san ju san nen," which means "Meiji thirty three." That was the thirty-third year of the reign of the Emperor Meiji, which is 1900 in our calendar. Therefore, in 1944 when John Useem obtained his age he was truly 44. Of course in 1948 he was 48.

In our census schedule in question 5 we ask for the birth date of the individual. In questions 37, 43, and 47 we ask for the birth dates of various relatives of the individual. In our secondary cross checking we made sure that the birth dates of the same individuals appearing on different schedules were in agreement with each other.

We found that the Yaps well knew the birth date which had been assigned to them in the Japanese police records. It would seem that in census procedure throughout all of Micronesia, except Guam, Nauru, and the Gilbert and Ellice Islands Colony, enumerators could well take advantage of this Japanese acculturation with regard to birth dates.

In regard to other techniques for establishing and checking on age:

Though Yaps have a poor idea of age in terms of an interval scale they have an excellent idea of age in terms of an ordinal scale.[1] In many of their ceremonies age plays an important part as a role determinant. For instance, in a Yap dance line the oldest person sits in the middle. As one moves from the middle toward the ends the participants are successively younger and younger. If Taman and Foru live in the same village, and you ask the villagers which of the two men was born first, you will find, almost every time you do this sort of thing, 100% reliability in the answers given.

Using the Japanese records we could establish the birth date of almost everyone in any given village. Then by questioning informants and observing interactions in various ceremonies we could arrive at very close approximations of the birth dates of those natives not reported in the Japanese records. For instance: If the Japanese records revealed Taman was born 18 years ago and Foru was born 20 years ago and we wished to determine the age of Tithin who was not in the Japanese records, we might observe that Tithin always sat between Taman and Foru in the dance line. Then nineteen years would be a good estimate of Tithin's age. Actually Tithin's age would be based on more evidence than this. However, this is a simplified example of the sort of thing we did.

The above is a hypothetical example. Foru, Taman, and Tithin are very common Yap male names. They are analogous to John, James, and William in America.

Another of the devices we used for getting a rough estimate of age was to find out a person's age grade at the time of some outstanding event in Yap. For instance we might ask a woman whether she was a <u>buliel</u> or a <u>rugoth</u> at the time the Japanese occupied Yap. If she replied she was a <u>rugoth</u> we could estimate she had been at least 12 years of age in 1914.

We often checked the ordinal age data gathered from the Yaps against the interval, and of course also ordinal, data obtained from the Japanese. We did not find any discrepancies in the Japanese data - except with regard to some very old people. Perhaps the Japanese data would indicate Taman was 78 years of age and Tithin was 74. However, all of the Yaps would insist that Tithin was really older than Taman. Fortunately this sort of thing did not happen with regard to Yaps under the age of 50.

With regard to the actual administration of the census: As far as was consistent with the rigorous gathering of information we let the Yaps run the census in their own way. We held many conferences with various Yap leaders. We carefully and fully briefed them on the information we sought. This was not a process of blind indoctrination. We would carefully go over each item of information, try to explain why we thought the information was important, and continually ask them for suggestions. We let the Yaps decide the best way to gather the desired information in Yap.

First the questions were decided upon and then translated into the Yap language. We were careful to avoid questions of an offensive nature.

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1. See Stevens (1946)

In Yap it is perfectly all right to question a woman concerning how many menstrual periods she missed prior to a spontaneous abortion. However, it is very impolite for a resident of one district to ask the name of the deceased parent of a resident of another district. As a matter of fact it is impolite for a resident of one district to closely question a resident of another district on any subject. Because of this factor in combination with others we decided to use a different team of census takers in each of the ten districts.

With regard to social class. There was general agreement that a direct question on this subject would lead many Yaps to claim they were born into or now belonged to a higher social class than the one they actually belonged to. However, they did give accurate information concerning village of birth and village of residence. Using standard ethnographic procedures we ascertained the social class of each Yap village.[1]

Once the census schedule had been drawn up the census taking procedure was determined, again with the full co-operation of the Yaps. Actually the Yaps had even more say in the census taking procedure than they had had in making up the schedule. Because there were certain pieces of information we had to obtain from the schedule we had more or less highly structured the content of the schedule and only left the fine details for the Yaps to decide upon.

The Yaps decided it would be best to take a census of one village at a time. The district chief completely decided which village would be done on which day. The district chief appointed the census enumerators. The district chief decided when we should take a census in his district. (Within limits on this last one - logistics problems, sheer geography, and ethnographic priority all entered into this decision. E.g. - Dr. Schneider wanted a census of Rumung before we moved on to Tomil so that he would have all of the census ethnographic information to aid him in his more intensive ethnographic investigations of that island. The five typhoons that occurred while we were on Yap played havoc with the census program. Immediately after a typhoon the Yaps are much more interested in draining their taro pits, rebuilding their houses, etc., than in taking a census.)

The district chief made these decisions after consulting the important men in his district. However, he acted as their spokesman. We dealt directly with him.

The census enumerators were paid at the prevailing wage rates set by the Naval administration. American policy is not to pay a chief for performing his chiefly duties. Therefore, the district chiefs were not on our payroll.

However, payments were to a large extent indirect. As a matter of policy we saw to it that census enumerators were never out of cigarettes. If census procedure took them from their tabinauws at meal time we provided food for them. Frequently we fed them even if they were near their tabinauw. On the other hand, they continually brought us fish, coconuts, pineapples, bananas, etc.

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1. See page 10. Dr. Schneider gathered the information on the social class of Rumung villages. Dr. Hunt and Mr. Kidder gathered the information on the social class of the other Yap villages.

We continually showered them with bits of our material culture. We gave them knives, notebooks, wallets, etc. We made it a point to take a black and white photograph of each census taker. These we processed in Yaptown and distributed as soon as possible. We made a four by five enlargement of each district chief.

We gave presents to the district chiefs in wholesale lots. They in turn strengthened their political fences by distributing these to the important men in their districts. We distributed many of our carpentry tools in this fashion.

About the most appreciated gift of all was twist tobacco. We saw to it that each village chief received tobacco to distribute to his village on the day of the census.

Since returning to the United States we have sent back to Yap colored enlargements of many of our 35mm Kodachrome slides.

We developed a strong esprit de corps within our census teams.

The Yap district is small; up to 400 people. The census taker knows the location of each household and knows each enumeratee so well that with regard to much of our census information the census taker can immediately note a discrepancy between the answer given and the fact of the matter.

Knowledge of the local terrain is very important in taking a Yap census. The houses are so located that one can hardly ever see another Yap house when he is at any given Yap house. There is a great premium on privacy with regard to house location on Yap. By using census takers only from the district concerned we always had enumerators who knew the terrain.

When we first arrived in a district we would set up our camp on a site selected by the chief. (Due to the particularistic nature of land holding in Yap this site was almost inevitably on land belonging to the chief's tabinauw.) The chief also designated young men to help unload the boat and set up camp. He would also designate a cookboy. During the first two days we would train and orient the four or five men designated by the chief to be census takers.

We would carefully go over each question on the schedule and have them fill in trial schedules for themselves and various members of their immediate family. Our general orientation procedure was that followed by Dajani in his famous enumeration of the Beersheba Beduins.[1]

We would check the results on these trial schedules and make corrections. However, we were careful not to embarrass anyone.

The district chief would notify the village chief two or three days in advance and he would see to it that everyone who possibly could was on hand the day of the census.

Early in the morning of the chosen day we would set out for the particular village designated. The district chief and often two or three of

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1. Dajani (1947)

the important men of the district went along. Each enumerator was equipped with a fountain pen, a clip board, and a set of blank schedules. He also had the correctly filled in ones on his own family to use as models.

We proceeded to the tabinauw of the village chief. Greetings were exchanged. Cigarettes were freely offered. For about an hour there was a lot of small talk and no actual census taking went on. Frequently we had done over several miles of very rough terrain, and we were all too tired to do anything but rest for an hour. In any event Yap custom did not call for immediately going to work. By the time an hour was up everyone who could had gathered at the chief's tabinauw. We proceeded to gather the information for our age grade and tabinauw check lists. The census team began enumerating.

Frequently, particularly during the census of the first village in the district, the census takers were not sure just what was called for in a particular question, or perhaps the informant did not understand or did not seem to know the answer. We were always on hand to be consulted in such matters. This did away with the usual need for extensive editing which is so often called for in census procedure.

The census taking was in many ways a leading social event in the village concerned. A great deal of ach'if (fermented sap of the coconut tree) was drunk. A lot of gossip was exchanged. Many Yaps asked us about our queer customs. We asked them about theirs. We looked for unusual racial types and for physical anomalies. If a physical anomoly was noted we would indicate this fact on the individual's census schedule. Later we would investigate its inheritance, etc.

Sometimes in the case of small adjacent villages we would plan on taking the census of two in one day. However, this procedure had its dangers. We would often ask the district chief to list the villages in his district in order of size. Then after the census of the district was completed we would figure out a rank order correlation between the chief's ordinal ranking and the actual findings. A rho of .6 was very high using this procedure. Sometimes it was negative. The Yaps do not think in terms of village population size. Therefore, what the village chief had thought was two small villages might turn out to be a small and a quite large village. Because of this the census of the second village during any given day might begin in the afternoon and have to be completed the following morning.

Any estimates of the number of people in different Yap villages and social classes based on usual ethnographic and not demographic interviewing is of no value at all. Not only would the chief have a very poor idea of the relative size of the villages in his district, but various other informants would give us, independently, rank order lists which when correlated with the chief's would give rhos of .9 or higher. Usually there was a rho of 1.0.

With regard to vital statistics: The Navy had one or more hospital corpsmen in each district. These were not regular Naval personnel but rather Yaps trained by the Navy and hired as civilians. These corpsmen were supposed to report all births and deaths in their districts to the Navy.

These Yap corpsmen were doing a good but not an excellent job when we arrived on Yap. They reported about 90% of the births and deaths, not 100%. Sometimes a given birth or death was reported twice. There was no cross checking to catch this sort of thing. In a few cases the wrong sex was reported in connection with a birth or a death. Occasionally the wrong parents of the infant were listed. The reports of the age of the deceased were frequently in error.

During our stay on Yap we recommended changes in the procedure which very much improved this situation. By the time we left the island the Yap corpsmen were doing an excellent job of reporting vital statistics.

The Navy very generously gave us complete access at all times to all of its vital statistics data. In addition we hired our own vital statistics reporters in each district. We continually cross checked to make sure the Navy data and our data was in agreement. We thoroughly investigated all disagreements and straightened them out.

Between the Yap corpsmen and our own reporters plus generally keeping our eyes and ears open, we obtained a record of each birth and death during our stay on Yap. However, we wanted a record of all births and deaths over a three year period for our vital rates.

For the births and deaths from August through December of 1948 we used Navy reports plus verification by Father Bailey, S. J., plus reports of Foru, our chief census and vital statistics reporter on the main island. These reports we received independently in the mail early in 1949. For the vital statistics for 1946 and the first nine months of 1947 we used a combination of the Navy reports, our primary and secondary check lists, the census, and general interrogation of the Yaps.

Before beginning the census of a district we would copy down all of the Navy vital statistics reports for that district. These gave for deaths: the name, sex, age, and village of the deceased, plus the date of death and sometimes the cause of death. For births: the name, sex, district, name of parents, of the newborn and the date of birth. By interrogation we would gather enough information to make up a census schedule for each of the deceased. If the babies were still alive we would obtain a schedule for them in the normal procedure of taking the census. We wanted to find out where each of the deceased fitted into the Yap social organization and the family structure. Amongst other things this kept the chances of duplication of any given death in our vital statistics to a minimum. As far as was possible we used the same methods to determine the age of the deceased that we used to determine the age of the living.

When we gathered our primary check list which was categorized according to <u>tabinauw</u> (household) we would enquire after the listing of the membership of each <u>tabinauw</u> whether or not there had been any deaths or pregnancies in the <u>tabinauw</u> since the beginning of the American occupation. We would obtain an account of the outcome of each pregnancy. Also a list of current pregnancies. We would cross check the vital statistics data thus obtained with the Navy data.

Questions 15, 16, 21, 22, 27, 29, 31, 33, 35 thru 38, 40 through 43, 46 thru 49, and 54 thru 57 on the census schedule give vital statistics information. As part of our secondary checking we would cross check the answers to these questions with our other sources of vital statistics data. Any place there was a discrepancy or agreement on an absurdity (e.g. an eight year old boy giving birth to sextuplets) we thoroughly investigated.

Using the above methods we obtained a record of all deaths and live births to Yap Carolinians during 1946, 1947, and 1948.

So much for our procedures in the field.

After we returned to Cambridge we had to code our demographic data in conjunction with the physical anthropological data and transfer them onto IBM cards. Each census schedule had to be coded and transferred to an IBM code sheet. After we had prepared the code sheets the Laboratory of Social Relations did the key punching for us.

The vital statistics data were transferred to 5 x 8 index cards, in coded form, for hand sorting.

The actual IBM runs were done in the Statistics Laboratory of Peabody Museum and the Laboratory of Social Relations.

In calculating the vital rates the above laboratories were used as well as the facilities of the Harvard Biological Laboratories and the Statistics Laboratory of the Maxwell Graduate School of Citizenship and Public Affairs at Syracuse University.

To summarize: The demographic method and techniques employed on Yap were a function of the smallness and isolation of the population and the peculiarities of Yap culture and environment. We wanted to ask pertinent questions and to receive reliable answers. In determining the questions we consulted the demographic and ethnographic traditions, history, and theories, our immediate ethnographic and demographic needs, and the opinions of the Yaps themselves. In obtaining the answers we relied upon long established demographic and ethnographic techniques and fitted these techniques to the peculiarities of the local situation.

The quantitative findings of the census and the vital statistics records will be found in the tables and charts at the end of this chapter.

Table one and chart one give an historical summary of the Yap population decline. A word is in order about the procedure employed in gathering these figures. Particularly those for the years 1920, 1925, 1935, 1936, and 1937. The figure for 1935 was obtained as follows: A figure for the number of natives in Yap in 1935 is given in the Civil Affairs Handbook, (1944, p. 34). On page 30 of Yanaihara (1939) is listed the number of Chamorros in Yap in 1935. As all of the natives on Yap were either Chamorro or Yapese we subtracted the Yanaihara figure from the Civil Affairs Handbook figure and obtained the number of Yapese in 1935.

Page 30 of Yanaihara gives the number of natives in the Yap district for 1920, 1925, 1930, 1935, 1936, and 1937. We found that the figure we had obtained for 1935, the figure indicating the number of Yapese in 1935, was 61% of the figure indicating the number of natives in the Yap district.

As 1930 was a year in which we had very accurate data on the number of Yapese we calculated 61% of the natives in the Yap district for that year. The calculated figure is 3,861. By calculation we would conclude there were 3,861 Yapese in 1930. The figure arrived at by Nanyo Gunto as the result of an accurate census in 1930 is 3,863. The calculated figure was in error by only 0.052%. With such heartening results we did not hesitate to calculate approximation for the Yapese population for 1920, 1925, 1936, and 1937.

Table I and Chart I indicate a steady population decline from 1899 through 1937. The only time the annual rate of decline was over four percent was from 1899 to 1900. As the 1899 figure represents the initial attempt at a Yap census it is quite possible that this high rate of decline is due more to faulty census procedure than to actual population decline.

There are two outstanding things indicated by the table and chart: (1) That the population decline was apparently under way prior to 1899. The only recorded times when the population decline was above three percent per annum was prior to World War I. The indication seems to be that the rate of decline has tended to decrease since that time. If we assume that the Yap population decrease followed the widely, but not universally, found ogive pattern then it is logical to assume that the decline was well under way before 1899. Aside from statistical indications there is good reason to believe that Yap public health reached a low ebb during the Spanish administration. This would have resulted in a high death rate and a rapid population decline. However, as we lack census figures before 1899 the best we can do is speculate and attempt rough statistical postdictions. (2) The second outstanding thing indicated by Table I and Chart I is that some time after 1937 there was an end to the decline. From 1946 through 1948 there was a very slow, but steady, population increase. Just when the decline stopped and the increase began we cannot be sure. In chart one we have drawn a straight line from 1937 to 1937 to 1946. But we cannot be at all sure just when the decline ended and the increase began. However, an examination of Table II indicates that perhaps the dramatic upturn shown in Chart I is correct.

The population profile and pyramid for all of Yap (Table II) shows a much larger number of children in the age bracket "under 5" than in the age bracket "5-9". Whereas 9.14% of the Yaps are under 5 years of age only 6.31% are age 5 to 9. This differential could be due to either a great differential in birth rate between 1939 - 1943 on the one hand and 1944-48 on the other or it could be due to high mortality of the infants born between 1939 and 1943. However, the fact that it is not until you get to the age group 40 to 44 that the number of Yaps

in any five year age group falls below that of age 5 to 9, leads one to suspect that the differential was due to a low birth rate and not due to an excessive infant and child death rate during the period of defense preparations and war on Yap. When the Japanese army began to expand on Yap in 1940 public health conditions improved rather than declined. However, there was great disruption of Yap family life. Yaps were moved about to make room for military installations and to furnish labor for constructing these installations. Phosphate from Angaur became more important in the Japanese economy and more Yaps were sent down to Angaur. Korror became a much more important city in the Japanese Mandate; many Yaps were sent down there to do all sorts of work in addition to mining at Angaur. (E.g. Many Yaps were telephone operators at Korror during the war.) All of these factors could be expected to lead to a decline in the birth rate. The following table indicates that the rise in the birth rate began in 1946:

Yaps of Both Sexes Born Between 1943 and 1947
Surviving Through 31 December 1947

| Year Born | Number Surviving |
|---|---|
| 1943 | 37 |
| 1944 | 27 |
| 1945 | 24 |
| 1946 | 62 |
| 1947 | 72 |

It is probable this indicated sharp rise in the birth rate which accounts for the increase in population from 1946 through 1948. Though of course without actual figures on the number of births and deaths during 1943 through 1945 we cannot be sure of this.

Chart II shows a comparison of the crude birth and death rates for Yap (1946 - 48) and the United States (1947). While the Yap birth rate 127.9, is only slightly higher than that of the United States, 25.8, the Yap death rate, 24.1, is much higher than that of the United States, 10.1. Figures from some other countries may throw more light on this comparison. The Egyptian (1945) crude birth rate was 42.6 while the crude death rate was 27.7. In India (1947) the crude birth rate was 26.6 while the crude death rate was 19.7. Western Samoa (1947) had a crude birth rate of 42.7 and a crude death rate of 9.5.

If the increase in population following 1946 is to continue the birth rate must continue to be higher than the death rate. Table II indicates that in 1961-63 there will be a smaller percentage of females in the age group with the highest specific fertility rate than there is at present. According to Table V the highest specific fertility rate occurs in the age group 20 - 24. The specific fertility rate is 233.51. This is more than half again as large as any other Yap specific fertility rate and than any No. Carolina specific fertility rate.

Table II indicates that there are now 94 Yap women in the age group 20 - 24 while there are only 78 females in the age group 5 - 9. The

latter will be in the 20 - 24 age group in 1963. Although female age specific death rates, see Table VII, are at their lowest point during the intervening years some of the 78 females age 5 - 9 will fail to survive to age 20 - 24. If Yap specific fertility rates in 1961-63 are anything like the rates for 1946-48 the Yap crude birth rate will be extremely low in 1961-63.

Tables VI and VII indicate that the age sex specific death rates for Yap begin to rise sharply at age 60. Thus for males in the fifteen years preceding age sixty the specific death rates are as follows:

| Age Group | Specific Death Rate |
|---|---|
| 45 - 49 | 22.62 |
| 50 - 54 | 30.98 |
| 55 - 59 | 9.84 |

while for age 60 and the succeeding fourteen years they are:

| | |
|---|---|
| 60 - 64 | 61.77 |
| 65 - 69 | 74.50 |
| 70 - 74 | 91.26 |

In the age group 45 - 59 there are 228 males. These will be in the 60-74 age group in 1961-63. At this time there are only 131 males in the high specific death rate 60-74 age group. A very similar situation obtains for the female population. This would indicate that the crude death rate for Yap will be much higher in 1963 than in 1948.

A word of precaution is needed. Predicting demographic rates 15 years in the future is at best a risky business. In Yap with the small numbers involved plus the lack of a life table it is particularly difficult. However, the best informed guess we can make is that in the time interval 1961-63 the crude birth rate will probably be lower and the crude death rate will probably be higher than during the 1946-48 time specific death rates obtain.

The crude rates given above for Egypt, India, and Western Samoa, particularly the latter, indicate that very different rates are frequently found in agricultural societies not too different from Yap. The indication would seem to be that better public health might lower the specific death rates in Yap. The comparisons given in Tables VI and VII between Yap and No. Carolina reveal that for almost every age group for both sexes the specific death rates are considerably lower in the American community.

As discussed in other parts of this report, cultural changes could very much affect the Yap birth rate. Some indication of this is given below in the comparison of the Yap communities in more frequent interaction with Yaptown, the port, with those in less frequent interaction.

Tables II, III, IV, and VIII present some data which may be used in comparing these two sets of communities.

A word is in order about the reasons for dividing Yap into the two sets of communities we did in making these comparisons.

Those communities in more frequent interaction with Yaptown, which we shall refer to in the rest of this report as the "near" communities, are the districts of Rul, Okau, Tomil, Gilifith, and Kanif. Rul, Okau, and Gilifith actually have a common boundary with the territory of Yaptown. Rul is south of the port, Okau is west, and Gilifith is north. Tomil is directly across Tomil Harbor from the port. Twice a day during 1946 through 1948 the Navy had a scheduled VP boat which went from the port to Teb village in Tomil and returned. Each morning and late each afternoon a round trip was made. This made it extremely easy for any ambulatory person in Tomil to go to Yaptown in the morning, conduct his business there and return to his village late in the afternoon. The main road south from Yaptown runs through part of Rul to Kanif. It is a short walk from Kanif to the port. Many natives frequently travel back and forth on this road.

The remaining Yap communities, which we shall refer to as the "far" communities in the remainder of this report, have much less interaction with Yaptown. The far communities consist of the districts of Gagil, Map, Rumung, Nif, and Guror.

Of the near communities the least accessible to the port is Kanif. The far communities in order from most to least accessibility are: Nif, Guror, Gagil, Map, and Rumung. Nif is on the same road south from Yaptown that Kanif is on, but it is further down the road. Guror is at the end of the road. To go from Gagil to the port one can either go by native canoe or one can walk clear across Gagil and Tomil to Teb village and take the scheduled VP. This involves a five mile walk over a lot of hills and on a poor road. It is impossible to go from Map or Rumung to Yaptown without going at least part way by native canoe. An anthropologist can go from any part of Yap, except Map and Rumung, to Yaptown without assistance from the natives.

Let us see if there are demographic differences between the near and the far communities. The following table in addition to Tables II, III and IV summarizes the important differences.

| | Near Communities | Far Communities |
|---|---|---|
| Crude birth rate | 31.49 | 23.29 |
| Crude death rate | 24.19 | 25.88 |
| Females age 15 - 49 as a percentage of the total population | 23.8% | 24.8% |

The Crude birth and death rates are per 1000 population and are based on a 1946-48 three year average.

The most important fact is that the near communities have a higher birth rate (this despite the fact that they have a smaller percentage of their population composed of females of childbearing age) and a lower death rate than the far communities.

A possible explanation for this finding is as follows: (1) with regard to the birth rate. The near communities are more acculturated than the far ones. The people in them pay less attention to Yap taboos, particularly those involving the relationship between eating patterns and age grade. As mentioned elsewhere in this report, these taboos place a terrible burden on the woman with several children and tend to make the women not want children. It is conceivable that the weakening of these taboos in the near communities has led to a situation in which the women have more desire for children than in the far communities.

Also with regard to the birthrate. The women in the near communities have much, much easier access to the hospital for pre-natal care. This may lead to fewer cases of reproductive wastage.

(2) with regard to the death rate. The general health situation is much better in the near communities. The people have easier access to the hospital and public health measures are much more strictly enforced. So long as we stayed within two miles of the port we would sometimes go for several days without any sign of mosquitoes. This sort of thing never happened in the far communities. It is symptomatic of the over-all differences in public health between the two areas.

Another factor indicated by tables III and IV is that there is <u>not</u> a significant difference between the number of females in the age group 5 - 9 and the age group 20 - 24 (53 in the younger age group and 54 females in the older) in the near communities. While, on the other hand, there <u>is</u> a significant difference in the number of females in these two age groups in the far communities (29 in the younger age group and 46 females in the older). This may indicate that the above discussed drop in the birth rate in 1961-63 will be mainly felt in the far communities. However, it is one thing to make tentative predictions about an isolated population, predictions based on the population profile, and it is quite something else when the population or populations concerned are not isolated. There is a great deal of migration between the near and far communities. Therefore, it is especially difficult to make even tentative predictions about the population profile of either of the sets of communities.

Table VIII gives the population of the districts in the near and in the far communities. It is to be noted that roughly three-fifths of the Yaps live in the near communities and two-fifths live in the far communities. Except for Guror all of the districts have a high sex ratio.

Table IX indicates this high sex ratio cuts across class lines as well as district lines. It is to be noted, however, that while the sex ratio for all of Yap is 114 (males per 100 females) if one considers only the three lowest social classes the sex ratio is about 100.

There are several possible reasons for the high sex ratio in Yap.

First of all it might merely be a function of faulty census taking. However, the first section of this part of the report indicates that the census was one with very careful cross checking. Also, using very different census techniques the Germans in 1900 (Senfft, 1903), the Japanese in 1930 (Nanyo Gunto, 1932), and Useem in 1946 all came out with results indicating a high sex ratio in Yap. If there were some systematic error in all of these censuses which would have led to under enumeration of females it should have done so in social classes seven, eight, and nine as well as the rest of Yap as the same census techniques were used in all social classes. However, as mentioned above we find a normal sex ratio in these lower classes.

Secondly it could be due to female infanticide. However, in our ethnographic investigations we turned up only one case of infanticide. In Warile Village in the district of Map we were given hearsay evidence that shortly after the American occupation of Yap, probably late in 1945, Gulad, a 22-year-old rugoth, gave birth to a "monster". The natives told us it looked more like a rat than a human infant. The father became temporarily alili, (which may be translated "insane"), beat the "monster" with a stick, and killed it. The informants told us this was a bad thing to do but was "understandable". No action was taken against the father. They told us that infanticide in general was considered a very bad thing in Yap. The killing of a normal baby would be looked on with abhorrence. No one knew the sex of the "monster". The sex was irrelevant.

There is no positive evidence that female infanticide is practiced at all. There are no data indicating that it is idealized under any conditions, even of stress and strain. Because of this we conclude the high sex ratio on Yap is not a function of female infanticide.

Thirdly the high sex ratio could be due to selective external migration. However, almost all Yap emigration is of males, this would tend to lower rather than raise the sex ratio. Practically all Yap immigration is made up of former Yap male emigre's. There is virtually no female external migration. What little there is consists of females from the Eastern Atolls who marry Yap men and then migrate to Yap. This also would tend to lower the sex ratio. The high sex ratio is definitely not due to selective external migration.

Fourthly the high sex ratio could be a function of differential mortality. Again the death rates for 1946-48 do not indicate any differential favoring a high sex ratio. The male crude death rate is 25.6 while the female crude death rate is 21.1. The specific death rates given in tables VI and VII are lower for the females than the males except during infancy and old age. (It is to be noted that the No. Carolina specific death rates are lower for the females in almost all age groups.)

It is possible that in the past there was differential mortality greatly favoring the males. That may be the explanation for the high sex ratio. However, we have no data to confirm or to infirm this.

Table II indicates that the high sex ratio exists in almost all age groups. It is particularly high, 151 males per 100 females, in the age group under five. This may indicate that the high sex ratio is a function

of an abnormally high sex ratio at birth. However, during the three years for which we have complete birth records, 1946 - 48, the sex ratio varied considerably from year to year. In 1946 the sex ratio at birth was 133, in 1947 it was 160, while in 1948 it was 89. A normal sex ratio at birth in western cultures is 106. There is no reason to believe Yap, in the long run, deviates significantly from 106.

Tables VI and VII indicate that one of the places Yap most differs from No. Carolina is in the age sex specific death rate of females under the age of five. In No. Carolina this rate is 15.78. In Yap it is 64.77. The rate for males is 19.40 in No. Carolina and 19.27 in Yap. The two male rates are almost identical.

This difference may indicate that while there is not female infanticide there is great neglect of female infants. This may lead to high female infant and child mortality which in turn leads to the high sex ratio. However, we found no confirmation of this situation. Further ethnographic investigation along this line is called for.

The relatively normal sex ratio in the three lowest classes is a very interesting phenomena. A Yap woman takes on the social class of her husband. A woman may marry two social classes above that of her birth in Yap. In the lower classes daughters are more of an asset than in the upper classes. If a lower class man can marry his daughter into the upper classes he can establish particularistic solidarity with at least one upper class family. An upper class father has everything to lose and nothing to gain when his daughter marries. For various other reasons male children are usually preferred to female children. It is very interesting that in the social classes where a daughter can be an asset the sex ratio is normal or below normal while in the classes where a daughter is more or less a liability the sex ratio is very high.

This may be symptomatic of differential care given to girl babies in the upper and in the lower classes. Unfortunately all of our intensive ethnography was carried on in upper class villages. Therefore, we have no data to either infirm or confirm this idea. Further ethnographic investigation along this line is called for.

Yap has a high sex ratio. We have considered various possible reasons for this. We have concluded that it is not due to faulty reporting, female infanticide, differential migration, or a differential sex ratio at birth. It may be due to differential mortality which is a function of differential care given to male and female children in the upper social classes.

To summarize: this part of the report deals with the formal demographic procedures and findings. In the first section of this part we discussed, in detail, the demographic procedures employed in our research. In the second section we discussed the findings.

We have gone over a brief historical summary of the Yap population decline. Next we discussed the future of the Yap population with comparative data from other cultures. After that there is a demographic comparison of the Yap communities near the port and Yap communities more distant from the port. Finally we discussed the high sex ratio found on Yap.

Table I

Successive Population Totals of Yap Islanders

| Year | Total Population | Annual % rate of population change between totals | Source of data |
|---|---|---|---|
| 1899 | 7,808 | ---- | Catholic mission census after Yanaihara (1939) |
| 1900 | 7,464 | -4.4 | German Government |
| 1903 | 7,156 | -1.4 | " " |
| 1905 | 6,641 | -3.6 | " " |
| 1910 | 6,328 | -1.0 | " " |
| 1911 | 6,187 | -3.8 | " " |
| 1915 | 5,790 | -1.6 | Matsumura (1918) |
| 1920 | 4,988 | -2.8 | 61% of Yap district total after Yanaihara (1939) |
| 1925 | 4,401 | -2.3 | " |
| 1930 | 3,863 | -2.4 | Volume 2, Nanyo Gunto (1932) |
| 1934 | 3,665 | -1.3 | Annual Report (1936) of Japanese government to League of Nations |
| 1935 | 3,556 | -3.0 | Reccmputed from Yanaihara (1939) |
| 1936 | 3,467 | -2.4 | 61% of Yap district total after Yanaihara (1939) |
| 1937 | 3,391 | -2.3 | " |
| 1946 | 2,582 | -2.6 | Census by our expedition |
| 1947 | 2,607 | +1.0 | " |
| 1948 | 2,625 | +0.6 | " |

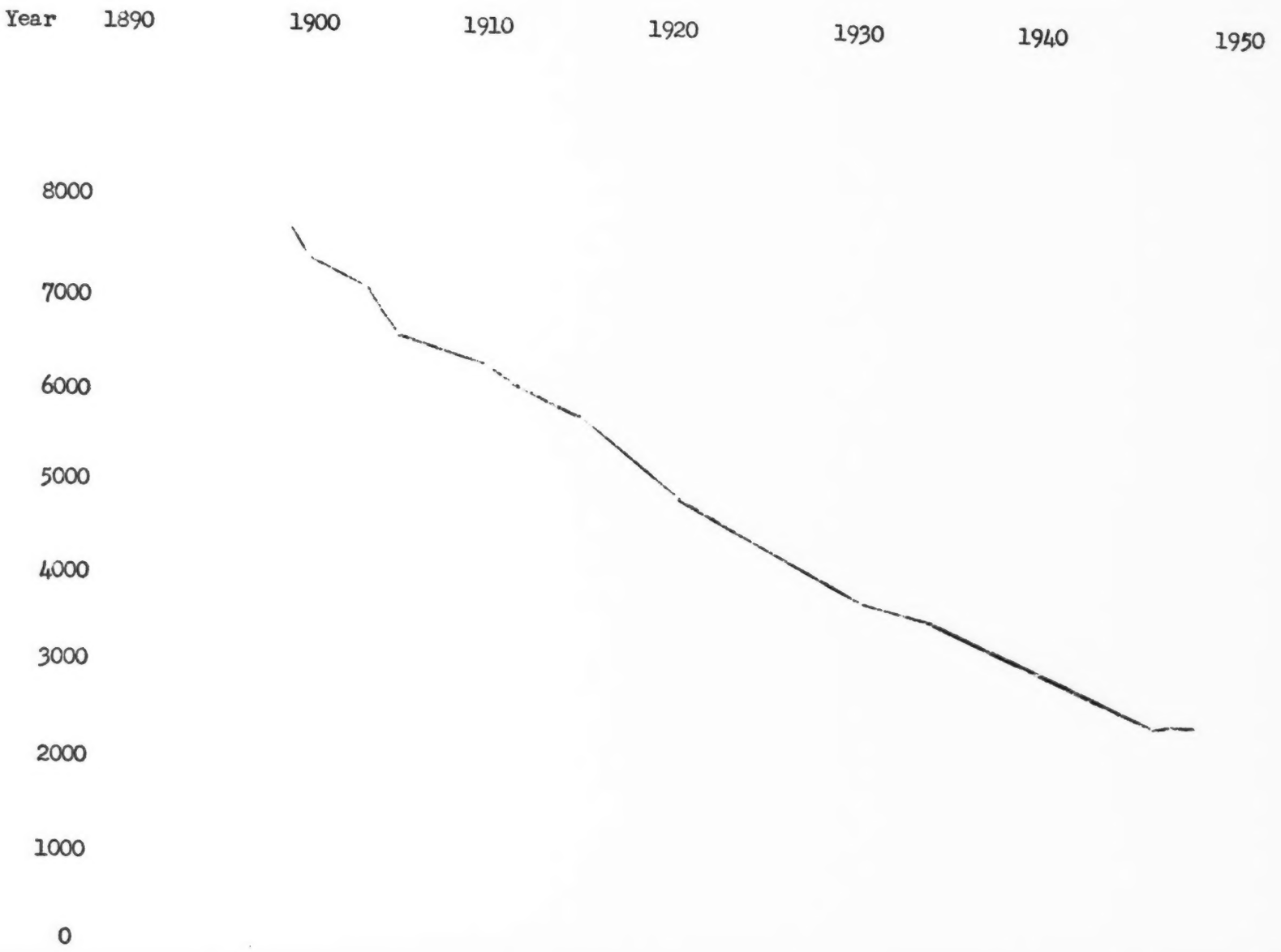


Chart I. Size of Yap Population

## Table II

Distribution of population by age and sex, with age-sex groups shown as a percentage of total population whose ages are known, Yap 1948

| | All | | Male | | Female | |
|---|---|---|---|---|---|---|
| Age groups | Number | Percent | Number | Percent | Number | Percent |
| Total | 2625 | | 1395 | | 1230 | |
| Ages unknown | 41 | | 22 | | 19 | |
| All of known ages | 2584 | 100.00 | 1373 | 53.12 | 1211 | 46.88 |
| Under 5 | 236 | 9.14 | 142 | 5.50 | 24 | 3.64 |
| 5 - 9 | 163 | 6.31 | 85 | 3.29 | 78 | 3.02 |
| 10 - 14 | 240 | 9.29 | 119 | 4.61 | 121 | 4.68 |
| 15 - 19 | 212 | 8.21 | 106 | 4.10 | 106 | 4.10 |
| 20 - 24 | 208 | 8.06 | 114 | 4.41 | 94 | 3.64 |
| 25 - 29 | 245 | 9.49 | 123 | 4.76 | 122 | 4.72 |
| 30 - 34 | 214 | 8.29 | 118 | 4.57 | 96 | 3.72 |
| 35 - 39 | 179 | 6.93 | 109 | 4.22 | 70 | 2.71 |
| 40 - 44 | 152 | 5.89 | 81 | 3.13 | 71 | 2.75 |
| 45 - 49 | 151 | 5.85 | 84 | 3.25 | 67 | 2.59 |
| 50 - 54 | 174 | 6.72 | 74 | 2.85 | 100 | 3.87 |
| 55 - 59 | 138 | 5.34 | 66 | 2.55 | 72 | 2.79 |
| 60 - 64 | 128 | 4.95 | 66 | 2.55 | 62 | 2.40 |
| 65 - 69 | 65 | 2.52 | 42 | 1.63 | 23 | 0.89 |
| 70 - 74 | 36 | 1.39 | 17 | 0.66 | 19 | 0.74 |
| 75 - 79 | 21 | 0.81 | 14 | 0.54 | 7 | 0.27 |
| 80 and above | 22 | 0.85 | 13 | 0.50 | 9 | 0.35 |

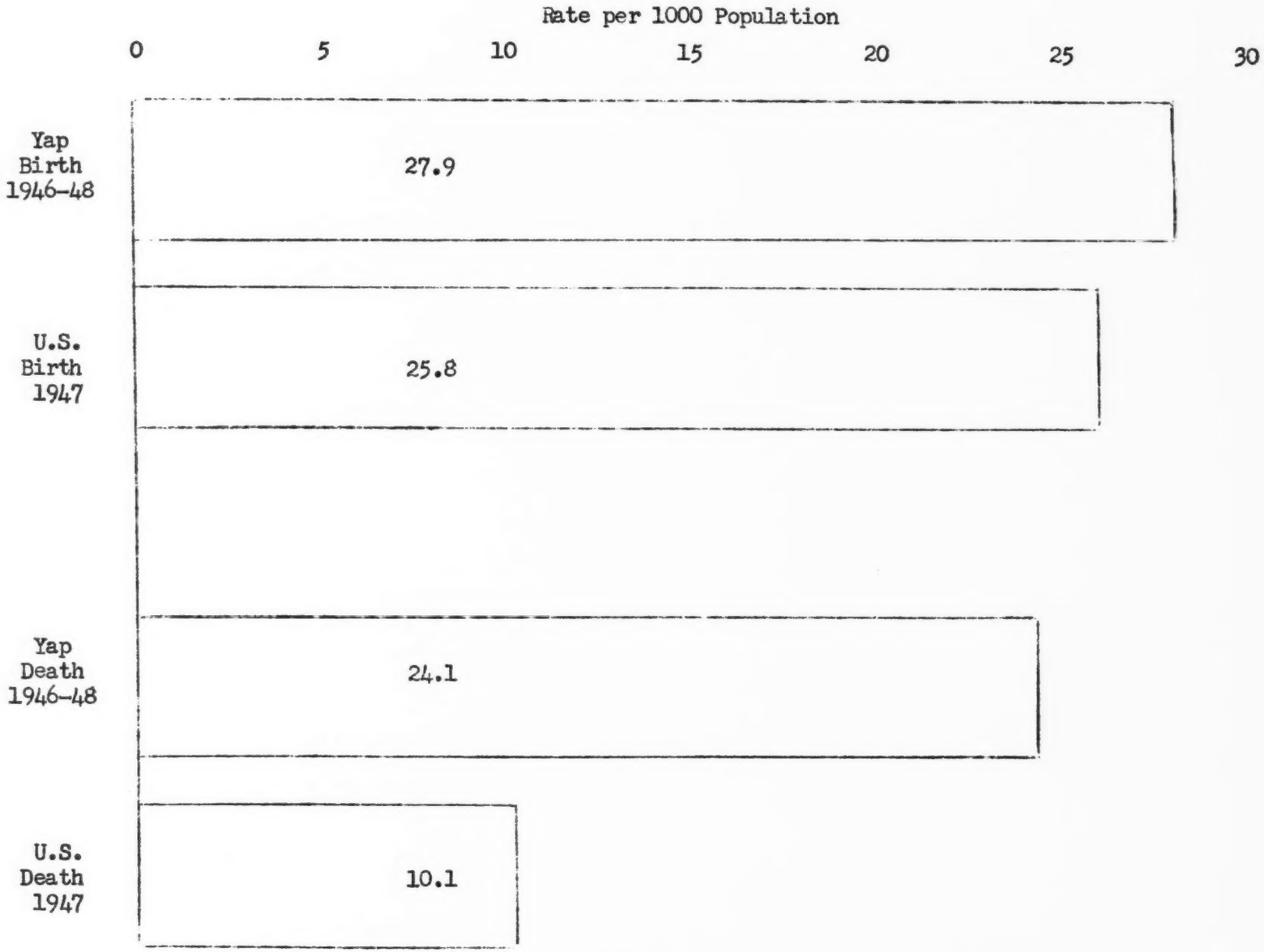


Chart II. A Comparison of the Crude Birth and Death Rates for Yap (1946-48) and the U.S. (1947).

## Table III

Distribution of population by age and sex, with age-sex groups shown as a percentage of total population whose ages are known, districts of Tomil, Rul. Gilifith, Okau, Kanif, 1948

| | All | | Female | | Male | |
|---|---|---|---|---|---|---|
| Age Groups | Number | Percent | Number | Percent | Number | Percent |
| Total | 1543 | | 716 | | 827 | |
| Ages unknown | 40 | | 19 | | 21 | |
| All of known ages | 1503 | 100.00 | 697 | 46.38 | 806 | 53.62 |
| Under 5 | 154 | 10.24 | 63 | 4.19 | 91 | 6.05 |
| 5 - 9 | 109 | 7.26 | 53 | 3.53 | 56 | 3.73 |
| 10 - 14 | 145 | 9.65 | 78 | 5.19 | 67 | 4.46 |
| 15 - 19 | 131 | 8.71 | 65 | 4.32 | 66 | 4.39 |
| 20 - 24 | 122 | 8.11 | 54 | 3.59 | 68 | 4.52 |
| 25 - 29 | 155 | 10.31 | 75 | 4.99 | 80 | 5.32 |
| 30 - 34 | 114 | 7.58 | 51 | 3.39 | 63 | 4.19 |
| 35 - 39 | 97 | 6.45 | 40 | 2.66 | 57 | 3.79 |
| 40 - 44 | 87 | 5.79 | 40 | 2.66 | 47 | 3.13 |
| 45 - 49 | 87 | 5.79 | 33 | 2.20 | 54 | 3.59 |
| 50 - 54 | 107 | 7.12 | 59 | 3.93 | 48 | 3.19 |
| 55 - 59 | 66 | 4.39 | 27 | 1.80 | 39 | 2.59 |
| 60 - 64 | 65 | 4.33 | 32 | 2.13 | 33 | 2.20 |
| 65 - 69 | 26 | 1.73 | 8 | 0.53 | 18 | 1.20 |
| 70 - 74 | 20 | 1.33 | 9 | 0.60 | 11 | 0.73 |
| 75 - 79 | 8 | 0.54 | 4 | 0.27 | 4 | 0.27 |
| 80 and above | 10 | 0.67 | 6 | 0.40 | 4 | 0.27 |

## Table IV

Distribution of population by age and sex, with age-sex groups shown as a percentage of total population whose ages are known, districts of Guror, Gagil, Map, Rumung, Nif, 1948

| | All | | Female | | Male | |
|---|---|---|---|---|---|---|
| Age groups | Number | Percent | Number | Percent | Number | Percent |
| Total | 1082 | | 514 | | 567 | |
| Ages unknown | 1 | | none | | 1 | |
| All of known ages | 1081 | 100.00 | 514 | 47.56 | 568 | 52.46 |
| Under 5 | 82 | 7.59 | 31 | 2.87 | 51 | 4.72 |
| 5 - 9 | 54 | 5.01 | 25 | 2.33 | 29 | 2.68 |
| 10 - 14 | 95 | 8.79 | 43 | 3.98 | 52 | 4.81 |
| 15 - 19 | 81 | 7.49 | 41 | 3.79 | 40 | 3.70 |
| 20 - 24 | 86 | 7.95 | 40 | 3.70 | 46 | 4.25 |
| 25 - 29 | 90 | 7.32 | 47 | 4.34 | 43 | 3.98 |
| 30 - 34 | 100 | 9.25 | 45 | 4.16 | 55 | 5.09 |
| 35 - 39 | 82 | 7.58 | 30 | 2.77 | 52 | 4.81 |
| 40 - 44 | 65 | 6.02 | 31 | 2.87 | 34 | 3.15 |
| 45 - 49 | 64 | 5.92 | 34 | 3.15 | 30 | 2.77 |
| 50 - 54 | 67 | 6.20 | 41 | 3.79 | 26 | 2.41 |
| 55 - 59 | 72 | 6.66 | 45 | 4.16 | 27 | 2.50 |
| 60 - 64 | 63 | 5.82 | 30 | 2.77 | 33 | 3.05 |
| 65 - 69 | 39 | 3.61 | 15 | 1.39 | 24 | 2.22 |
| 70 - 74 | 16 | 1.49 | 10 | 0.93 | 6 | 0.56 |
| 75 - 79 | 13 | 1.21 | 3 | 0.28 | 10 | 0.93 |
| 80 and above | 12 | 1.11 | 3 | 0.28 | 9 | 0.83 |

Table V

A comparison of Yap (1947) and North Carolina (white, 1930) Specific Fertility Rates, Total Fertility, and Gross Reproduction Rate.

| Age group | No. of Yap females 31 Dec. 1947 (Unknown ages prorated) (1) | 3 yr. average no. of live births to females in specified ages 1946 - 48 (2) | Yap specific fertility rates (2) + (1)x1000 (3) | No. Carolina specific fertility rates, same age groupings * (4) | Yap 3 yr. average of female live births 1946 - 48 (5) | Fertility rate for female births (5) + (1)x 1000 (6) | No. Carolina fertility rate for female births ** (7) |
|---|---|---|---|---|---|---|---|
| All ages | 744.9 | 73.3 | | | 31.7 | | |
| 10 - 14 | 122.9 | 0.3 | 2.44 | 0.32 | 0.3 | 2.44 | 0.00 |
| 15 - 19 | 107.7 | 11.0 | 102.14 | 55.19 | 6.0 | 55.71 | 29.17 |
| 20 - 24 | 95.5 | 22.3 | 233.51 | 147.32 | 8.0 | 83.77 | 78.03 |
| 25 - 29 | 125.0 | 18.0 | 144.00 | 145.15 | 8.0 | 64.00 | 77.97 |
| 30 - 34 | 97.5 | 10.7 | 109.74 | 123.19 | 4.7 | 48.20 | 65.53 |
| 35 - 39 | 73.1 | 7.7 | 105.33 | 89.31 | 3.7 | 50.62 | 48.93 |
| 40 - 44 | 72.1 | 2.3 | 31.90 | 39.50 | 1.0 | 13.87 | 21.46 |
| 45 - 49 | 68.1 | 1.0 | 14.68 | 4.62 | 0.0 | 0.00 | 2.68 |
| 50 - 54 | 95.5 | 0.0 | 0.00 | 0.07 | 0.0 | 0.00 | 0.00 |
| | | | 743.74 | 604.67 | | 318.61 | 323.77 |

Total fertility: Yap = 743.75 x 5 = 3717.70
No. Carolina = 604.67 x 5 = 3023.35

Gross Reproduction Rate: Yap = $\frac{(5)\ (318.61)}{1000}$ = 1.593

No. Carolina = $\frac{(5)\ (323.77)}{1000}$ = 1.619

*Hagood (1941) Page 854
** Ibid, Page 891

Table VI

Age-sex specific death rates, Yap males, 1946-48

| Age group | Population 31 Dec. 1947 (1) | Same date (Unknown ages prorated) 1.016 x (1) (2) | Deaths 1946 (3) | 1947 (4) | 1948 (5) | Total for three years (6) | Yearly average (6) ÷ 3 (7) | Age-sex specific death rate (7) ÷ (2) x 1000 (8) | Age-sex specific death rates, No. Carolina white males, 1930 Hagood, 1941 (pps. 838-9) (9) |
|---|---|---|---|---|---|---|---|---|---|
| All ages | 1393 | | 46 | 27 | 34 | 107 | | | |
| Unknown ages | 22 | | none | none | none | | | | |
| All of known ages | 1371 | 1392.9 | 46 | 27 | 34 | 107 | | | |
| Under 5 | 119 | 120.9 | 4 | 1 | 2 | 7 | 2.33 | 19.27 | 19.40 |
| 5 - 9 | 86 | 87.4 | 0 | 0 | 1 | 1 | 0.33 | 3.76 | 1.46 |
| 10 - 14 | 119 | 120.9 | 0 | 0 | 1 | 1 | 0.33 | 2.73 | 1.19 |
| 15 - 19 | 106 | 107.7 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 2.10 |
| 20 - 24 | 114 | 115.8 | 2 | 1 | 1 | 4 | 1.33 | 11.48 | 3.25 |
| 25 - 29 | 125 | 127.0 | 3 | 2 | 3 | 8 | 2.67 | 21.02 | 3.52 |
| 30 - 34 | 120 | 121.9 | 4 | 0 | 2 | 6 | 2.00 | 16.41 | 4.96 |
| 35 - 39 | 111 | 112.8 | 6 | 2 | 3 | 11 | 3.67 | 32.53 | 5.42 |
| 40 - 44 | 82 | 83.3 | 4 | 4 | 2 | 10 | 3.33 | 39.98 | 7.48 |
| 45 - 49 | 87 | 88.4 | 3 | 0 | 3 | 6 | 2.00 | 22.62 | 10.17 |
| 50 - 54 | 74 | 75.2 | 3 | 2 | 2 | 7 | 2.33 | 30.98 | 13.17 |
| 55 - 59 | 67 | 68.1 | 1 | 0 | 1 | 2 | 0.67 | 9.84 | 23.15 |
| 60 - 64 | 69 | 70.1 | 4 | 4 | 5 | 13 | 4.33 | 61.77 | 32.61 |
| 65 - 69 | 44 | 44.7 | 2 | 5 | 3 | 10 | 3.33 | 74.50 | 49.57 |
| 70 - 74 | 18 | 18.3 | 3 | 1 | 1 | 5 | 1.67 | 91.26 | 75.25 |
| 75 - 79 | 15 | 15.2 | 4 | 0 | 1 | 5 | 1.67 | 109.87 | 112.70 |
| 80 and above | 15 | 15.2 | 3 | 5 | 3 | 11 | 3.67 | 241.45 | 199.83 |

Distributing factor (Used in column two) = $\frac{\text{Total male population}}{\text{Males of known ages}}$ $\frac{1393}{1371}$ = 1.016

Table VII

Age-Sex specific death rates, Yap females, 1946 - 48

| Age group | Population 31 Dec. 1947 (1) | Same date (Unknown ages prorated) 1.016 x (1) (2) | Deaths 1946 (3) | Deaths 1947 (4) | Deaths 1948 (5) | Total for three years (6) | Yearly average (6)÷3 (7) | Age-sex specific death rate (7)÷(2)x1000 (8) | Age-sex specific death rates, No. Carolina white females, 1930 Hagood, 1941 (pps. 838-9) (9) |
|---|---|---|---|---|---|---|---|---|---|
| All ages | 1214 | | 38 | 32 | 19 | 89 | | | |
| Unknown ages | 19 | | none | none | none | | | | |
| All of known ages | 1195 | 1214.1 | 38 | 32 | 19 | 89 | | | |
| Under 5 | 71 | 72.1 | 7 | 4 | 3 | 14 | 4.67 | 64.77 | 15.78 |
| 5 - 9 | 78 | 79.2 | 0 | 1 | 0 | 1 | 0.33 | 4.16 | 1.17 |
| 10 - 14 | 121 | 122.9 | 0 | 1 | 0 | 1 | 0.33 | 2.68 | 0.93 |
| 15 - 19 | 106 | 107.7 | 2 | 1 | 0 | 3 | 1.00 | 9.28 | 1.69 |
| 20 - 24 | 94 | 95.5 | 2 | 2 | 0 | 4 | 1.33 | 13.93 | 3.17 |
| 25 - 29 | 123 | 125.0 | 1 | 1 | 2 | 4 | 1.33 | 10.64 | 3.90 |
| 30 - 34 | 96 | 97.5 | 1 | 1 | 1 | 3 | 1.00 | 10.26 | 4.84 |
| 35 - 39 | 72 | 73.1 | 3 | 2 | 2 | 7 | 2.33 | 31.87 | 5.69 |
| 40 - 44 | 71 | 72.1 | 4 | 1 | 0 | 5 | 1.67 | 23.16 | 6.25 |
| 45 - 49 | 67 | 68.1 | 2 | 5 | 0 | 7 | 2.33 | 34.21 | 7.74 |
| 50 - 54 | 94 | 95.5 | 3 | 0 | 0 | 3 | 1.00 | 10.47 | 11.20 |
| 55 - 59 | 77 | 78.2 | 1 | 2 | 1 | 4 | 1.33 | 17.01 | 17.29 |
| 60 - 64 | 63 | 64.0 | 4 | 4 | 1 | 9 | 3.00 | 46.87 | 26.77 |
| 65 - 69 | 24 | 24.4 | 1 | 1 | 2 | 4 | 1.33 | 54.51 | 39.95 |
| 70 - 74 | 20 | 20.3 | 2 | 2 | 2 | 6 | 2.00 | 98.52 | 71.20 |
| 75 - 79 | 7 | 7.1 | 3 | 2 | 2 | 7 | 2.33 | 328.17 | 99.69 |
| 80 and above | 11 | 11.2 | 2 | 2 | 3 | 7 | 2.33 | 208.04 | 187.99 |

$$\text{Distributing factor} = \frac{\text{Total female population}}{\text{Females of known ages}} = \frac{1214}{1195} = 1.016$$

## Table VIII

POPULATION OF YAP DISTRICTS, 31 JULY 1948

| | Male | Female | Total |
|---|---|---|---|
| Near Districts:- | | | |
| Rul | 209 | 194 | 403 |
| Tomil | 218 | 192 | 410 |
| Gilifith | 185 | 154 | 339 |
| Okau | 125 | 106 | 231 |
| Kanif | 90 | 70 | 160 |
| subtotals | 827 | 716 | 1543 |
| Far Districts:- | | | |
| Gagil | 218 | 182 | 400 |
| Map | 140 | 133 | 273 |
| Rumung | 69 | 61 | 130 |
| Nif | 81 | 75 | 156 |
| Guror | 60 | 63 | 123 |
| subtotals | 568 | 514 | 1082 |
| grand totals | 1395 | 1230 | 2625 |

## Table IX

Population of the Yap Social Classes, 31 July 1948

| Social Class | Male | Female | Total |
|---|---|---|---|
| 1 | 155 | 135 | 290 |
| 2 | 142 | 127 | 269 |
| 3 | 230 | 207 | 437 |
| 4 | 210 | 171 | 381 |
| 5 | 326 | 282 | 608 |
| 6 | 139 | 114 | 253 |
| 7 | 129 | 127 | 256 |
| 8 | 39 | 36 | 75 |
| 9 | 25 | 31 | 56 |

## III. THE ISLAND SETTING

### A. Environment and Economy

In order to understand many of the statements to be made further on in this report, it is necessary to give some orientation as to the material and cultural life of the Yap people. The material is not as complete as would be found in a standard ethnography, but will suffice for a specific orientation on population decline.

Yap is located 325 miles northeast of Palau in the Western Carolines Islands. It consists of 4 main islands, separated by a canal or narrow neck of the sea, which is in no sense a barrier to people's movements.

Depending upon what you would call an islet or a rock, there are about 12 small islands of no great importance except that one of them now has the leper colony. All these are surrounded by a reef broken in numerous places, permitting the entrance of naval vessels up to the size of an L.S.M. into the very treacherous Tomil Harbor.

The length of the main islands, which look from an airplane like one land mass, is about 16 miles and the width varies from 1 to about 6 miles. Land area is usually considered to be about 80 to 90 square miles.

The geological study of Yap has not been finished, so there is still a lot of basic disagreement between American geologists who have worked there. A fair concensus of opinion is that Yap is composed of material which has been pushed up from the sea bottom, and is consequently basalt. There are mineral traces and volcanic formations indicating active volancos in the past. The island as a consequence has soils which are relatively fertile when compared to coral atolls, which are more general throughout Micronesia, being especially so in its valleys and along the coast.

Yap is hilly through its center, the highest point being a ridge from 600 to 800 feet high. In the south there is rolling country with frequent pot hole lakes or swamps. Across in Tomil there is a plateau center, tapering down to a coastal plain. This high center region contrasts markedly with the coast in being covered by grass and scattered Pandanus trees.

Coming into the island from the sea, or flying over it, the contrast is marked. Where cultivation was pushed to an extreme degree by the Japanese in their frantic search for food, the hill tops and sides are red, eroded scars in the otherwise green and tan background.

The climate is hot and miserable for most of the year, being somewhat more suitable for Americans from about the end of November through February. In this latter period an almost steady northeast wind blows and in sleeping a sheet is necessary to prevent colds. This is also typhoon time, however, so it is not an unmixed blessing. The rest of the year there is a calm which is relatively intolerable, or a not too effective breeze from almost any direction.

Theoretically, there is a cycle of northeast winds, a calm, some southwest winds, a calm and then the cycle is repeated. People who have been there several years say that this might be a statistical average, but it was not usually so precise.

Temperature over a period of years averages about 80 degrees with an average range of variation of 2 or 3 degrees. Humidity averages about 83 to 87.

Rainfall averages about 130 inches per year. This is distributed rather unevenly, although Japanese records indicate 259 rainy days per year. There are weeks in the transitional calm periods when a poncho is necessary for even the shortest journey, while in January weeks can go by without a drop.

Where one catches water for drinking, the pattern does not stand out as dry statistics, but as times when all water would gradually go, times when each day filled the lister bags anew, and in between when the whole outfit just blew away.

The reactions of various Americans there were diverse, ranging from near prostration through buoyant energy. No one was really too uncomfortable in the several months of the steady northeast breeze and the natives were actually cold, putting on odd shirts and blankets that they had acquired over the years. During at least half of the year, however, even the natives are practically knocked out. On some afternoons it is possible to see natives, who would usually attempt to help or talk to one, just sit and pant, and who could not by any means be made to evince an interest in anything.

What we would consider a suitable water supply is hard to come by on Yap. Most people drink coconuts when they are available. You can catch water down tree trunks by tying a bit of leaf to the tree and putting the loose end in a barrel. Theoretically it should be better than ground water, but it was inevitably fouled with dust, bugs, sticks, etc. Few people will drink out of a stream if it can be avoided. However, in the days of dryness after typhoons had torn away all drinking nuts, they thought nothing of digging a pit down two feet below the normally wet surface of a taro pit, and drinking the fouled, salty water that slowly accumulated. Where water was collected for cooking or washing a dish for instance, no one hesitated to use taro pit water or some from a stream.

That it was a real problem for the Japanese who lived out in the bush, is indicated by the concrete cisterns which still did a fair job of holding water while we were there. We never drank from it, but it was handy for clothing, and with a little chemical purifier for dishes.

During the depths of the dry season, the small Navy group had to run water distilling machines day and night at rather great expense. There was some consultation as to whether the two lakes might be piped into colony, but since they also shrank, this was considered to be unfeasible.

Flora on the island has been covered fairly adequately in older publications, and by Mr. Wong whose work is mentioned elsewhere. There is a section on food products where many common plants are covered.

Fauna is limited enough and of even somewhat less use or interest to the islanders. What strikes the mind in retrospect about the animals of Yap is the complete safety with which one can walk about without any serious danger. Of mammals there are the huge fruit bats which hang in clusters from trees all day and which are important socially as things to be detested and tortured. Almost the sole use of the very simple blow gun which is found here, is to kill these bats. Many people eat them and there is no great prejudice at their appearance. Rats and mice are also found.

Yaps in general will not raise cows or drink milk from them with the rarest of exceptions. It is possible that the Chamorro, so loathed by Yap people, as a great cow, pig and goat owner, has made them prejudiced. When the Chamorros were forced to move to Tinian they took almost all their animals with them. The few which were left, through lack of space on the boat, were bought at ridiculously low prices by Yaps. Yaps do keep pigs, but it is "old Yap custom" and therefore right.

Dogs and cats abound and are treated with a mixture of love and hate. This involves a torture element which seemed to permeate Yap relationship with all animals. In general they eat Yap food, such as coconut, papaya, taro, yams and bread-fruit.

There are no poisonous snakes, and the large green lizard (Hydrosaurus marmoratus) is important principally in certain magical contexts. They grow at least 5 feet long, but rarely are they seen over a couple of feet in length. Geckos, the little lizards so common to the tropics, are everywhere. An occasional sea turtle is drawn in, but compared to the eastern atolls, it is of slight importance.

Most striking is the ever present toad. As an attempt to combat the mosquito, non malarial, but the one most annoying features of life on Yap, toads were introduced by the Japanese and have prospered. The sensation of stepping on a toad at night with the bare foot is not hard to imagine, once you have experienced the feeling through even a heavy shoe, and the native dislike for this animal is not hard to deduce from that.

They are everywhere and in such great numbers that on white moonlight nights a sandy path appears to be literally covered with moving rocks.

If they have had an appreciable effect in lessening the mosquito population through consuming larvae in taro pits and swamps, it would be hard to imagine how the place was formerly habitable.

During the season when steady winds blow out of the northeast, one can sit reasonably comfortably without netting and during the day not get a bite. But under any other condition, come sundown, and 30 per cent D.D.T. sprayed over a 60 yard circle, in grass trees and bushes will not begin to control them.

The standard control is to slap and slap again or wear an old army shirt, but one never sees a native who will retire into his house and build a smudge fire, or even sit in drifting smoke. After extremely strong winds had kept the mosquitoes from feeding for a day or so, there was no way to keep from being eaten alive except to get under a bed net. Inland on high ground there are very few during the day time, but the nuisance is not appreciably less at night.

Flies are everywhere and make the day miserable. Rotting vegetation with damp brush makes an ideal breeding ground. Undoubtedly flies have a delightful time, since the jungle and beach constitute one big toilet for the natives. All day long a native will sit brushing and slapping, even though a greater degree of tolerance has been developed against the tickle of a fly's walk than a newcomer could stand.

Then there are spiders, centipedes, and wasps which give an occasional bite or sting, but all this is made up for by the fact that there are no chiggers or ticks. For one who has fished or hunted in the midwest or south, it is a complete revelation to be able to walk through grass or brush without getting hundreds of bites.

No great attention was paid to birds except to note that they weren't very plentiful, colorful or noisy and that they didn't seem to be eaten or used in any way. Again there was this torture element by young boys who would trap them for this purpose by putting out a trick roost with sticky gum on it.

People live by preference around the perimeter of the island, leaving the whole central region essentially empty. Village life is the usual way we would speak of their existence, but the village is actually quite hard to detect in many cases. For example, when first landing at Gachapar, all that could be seen was a dirty, brushy coast line with a deteriorated stone pier pushing out about 100 feet. Finally a brown body or two appeared, and the acting chief was summoned. There were old foundations which we recognized as house platforms, and rough slab stone paths. Here and there a tumble down shack of native materials was barely standing. But there was no village -- it was just brush, trees and mud. In choosing the site for camp, it was necessary that we walk about with someone

and all one could see was an occasional native on the path, or a little shack of a house almost invisible in the undergrowth. Any vision of a little village with a broad cleared area surrounded by neat houses was rapidly dispelled. There would be no sitting in the middle of a plaza, watching life go on. If you were at one house you couldn't see another, and if you weren't in a specific yard you were in the jungle staring at a house, acting as a Yap criminal would do if he contemplated a theft.

That this extreme isolation was probably not the pattern when more people were present is attested by the many spots where from one house platform you can see several others. And this extreme scattering is not wholly typical because in one area, a whole row of houses clearly visible one to the other exists on one side of a fine cobblestone path, while on the other side are several abandoned platforms. Furthermore, where several Japanese style frame buildings were erected around a squarish plaza, as in Balabat village, these houses were readily accepted, no great urge making them slip off into the jungle to hide.

The paths mentioned are varied in quality so that, through Fanif to Guror in the south, a jeep can, with great effort, make out in dry weather, while there is nothing traversable in and around Gachapar to the north.

They were made under German authority, the pictures taken by Müller showing wide, clean, level roads that no longer exist. A bridge had even been built over the Tagererg canal as well, and causeways made to connect all the parts of the island for at least wagon traffic.

The bridge has since been destroyed and the road work, including some improvements by the Japanese, has deteriorated to the point where, at the time we arrived, jeep travel was limited to about a mile at the furthest. Close to the time when we left some of the old and even a new road or two had been recut to make most of the southern half accessible in dry weather. The roads wash badly at each rainfall, and since no plan was made for their upkeep, and even some controversy was expressed as to whether they were good for the Yaps or not, their future was not certain.

There is nothing pretty about the country. It is swampy, brushy, dirty and hot. From a road there is nothing much worth while to look at. At first, one cannot see why the people all clustered on the coastal strip, surrounded on all sides by taro swamps while the big open country up in back seemed so much drier and more pleasant. There seemed to be certain logical reasons such as access to the sea or water for taro, but it takes only a series of hikes over the rugged interior, where it seemed even hotter and even more humid, to show the logic of their choice.

Individual houses and yards are again so varied as to make a generalization difficult. Pictures in older books by Müller and Christian show the large sturdy "native" house which has become since then the exception rather than the rule. There are still a few, one of which belongs to the priest from Alog. It has the typical coral platform, built up about 3 feet from ground level, finished around the sides by squared fitted blocks and on the top with fine gravel stones. The heavy upright logs of which the frame is composed are solidly held in this stone groundwork, and to them are tied, through the most intricate of coconut cord bindings, the cross members to make a tall steep roof.

The ground plan is hexagonal actually, through bulging out the front and rear of a long rectangle. The roof juts even further out at both ends, fore and aft coming to sharp points. Roofs are made of slab-like shingles, plaited of coconut leaves, which have holes and slashes left where the leaves do not mesh perfectly, but which when tied on double to the thin bamboo strips, make a very efficient rain shedder. The extreme steepness of the roof pitch is no doubt partly esthetic, but has, as a practical justification, the ability to shed more water even when greatly dried out and all the holes enlarged.

At first one could not see the point in making a roof come down so far that the short three-foot wall was more than half way protected again. But one of the most characteristic features of Yap weather is the five minutes of rain then an hour clear, then looking over the sea the next squall can be seen and then it is over. These come by day and night. At the same time, the steady breeze is necessary for comfort and, as was soon found out, a little tent does not compare favorably with a good Yap house. Any time a small tent or house with conventional windows was left for an hour, there was great danger of water blowing through the whole structure.

This sloping roof then, which is in effect a sort of wall, allows air to come in under it constantly, keeping out all but rain driven by a very strong wind.

The walls here are made by binding together quarter inch lengths of bamboo, making a practically light-proof cover. Others had plaited bamboo strips with intricate patterns woven through them, using colored string. And still another had no walls at all, filling the spaces between log uprights, but would have suspended, ordinary coconut leaf mats to protect the interior from excessive rain or wind from whatever direction might be necessary.

Inside the house bare logs, bamboo bundles and slat floor gives little comfort to one who is used to chairs and tables. A house is essentially a sleeping and storage place. Only the most inclement weather can drive people inside for entertainment or talking.

Those who have been able, have acquired an old cot mattress or a cot and if possible a mosquito net suspended from one corner. There is little on the floor, even the sleeping mats being leaned in a corner by day. Nearly everything hangs from the rafters, or lies up on them, or is tied to the wall. Most people now, who had anything to do with the Japanese, have a strong box with a key. Here a little money, native and foreign, plus any other valuables will be safe unless of course, someone picks the lock or steals the box, both activities being considered skilled arts.

And over in a corner a couple of dirty blankets, some cloth and shirts or a pair of shoes, and two or three lamps, all without wicks. This same pattern for keeping the floor bare is followed in little Japanese frame houses which are found here and there. These houses had tin roofs, two by fours and siding in their construction. Along one wall were built-in bunks which have now been converted into storage space.

Across the ceiling have been laid some bamboo poles and hanging from them are loops of coconut cord, sacks, an old shirt, mosquito bar and a lantern. Leaning against the wall are two cots and several sleeping mats.

There were houses on Yap which were not over 8 feet long by 5 feet wide and 3 feet high which were used from January after the first storm until we left. New houses were being made but it is a slow process, and in few cases were there to be seen any private houses going up which matched the old strong large traditional type.

A yard is, in best tradition, kept picked free from weeds or grass and has a coral sandy surface. It took constant day by day plugging at the job and a daily brushing off with a whisk broom made from a bundle of coconut ribs. This idea had varying realities, of course, but all yards were prepared with this pattern in mind, and whoever let weeds grow was severely criticized. All through the yard, anywhere from 20 to 50 yards square, were producing trees, plants and shade trees.

Fencing seemed to be even more variable and not to coincide with old or new type houses. In Benik almost every house had a little bamboo picket fence, yet other low class villages had none. Many would have instead a row of hibiscus bushes.

In the yard, depending upon the family size and composition, are little houses for a girl over the age of menarche and for older boys, but of no definite age or status. One girl's house was fairly typical, being just a little miniature Yap house of native materials. Others are on stilts, and others have tin roofs and sides. It needs to be big enough to sleep in and hold a trinket or a spare grass skirt which, however, is usually hanging outside airing.

Then there is always a cook house or so, again depending upon the composition of the family. There is every variety, ranging from a simple sheet of tin leaning against a post to shelter the pot, to a large dog house affair of planed lumber

in which one could both cook and eat. It is very necessary to have some shelter to guard against the frequent squalls, but it is not worth building medium well because the first good storm destroys your work.

In speaking of technology in a usual sense, one will find great disappointment on Yap. The few miserable souvenirs that have been collected by various comers to the island testify to this fact. Long ago before iron was available, they made a hoe and an adze from shell tied to a handle. There may be one or two left today, but they are hard to come by. Now about every woman has a bowie knife, an iron stake to tear up the ground, and the men have a fine adze head of steel of such quality that most date, without appreciable wear, from the time of early German traders. In every village there is an axe, and a pick or shovel or two for heavy chopping or ground moving, these being sufficient because an elaborate system of borrowing and lending.

The most elaborate tool kit was that of a young man in Gachapar who had braces and bits, saws, hammers, arc planes. After the second storm, most of the contents of a huge Navy warehouse were surveyed, so that literally hundreds of axes, shovels, drills and other tools were given away to the natives. Through several administrations and access to trade stores for years, the usual romantic, but highly impractical native tools, have been replaced.

Characteristic of any building activity is the Japanese saw that cuts on the pull, and by the adze which in most men's hands can carve a statue or notch a log.

Every person packs a knife. Without doubt the one most popular implement that we took along was a regular butcher knife. These were begged and stolen more than anything else. The Island Trading Company which now supplies the native store, had gotten, through misinformation, about a ton of huge yard-long bowie knives. They were just too big and awkward to swing and couldn't even draw 50 cents each on the market.

There were still some relic pots made as late as German times, poorly fired, coarse, crumbly and of simple shapes made by hollowing out a lump of clay, chunks being added around the rim. It apparently had a semi-magical context since only women of the lowest classes did this work in isolated huts, working without clothing. Nothing is used now except a pot of iron or aluminum.

There are baskets for everything, the most characteristic shape being a long, banana shaped one plaited from a single coconut leaf. There are technical differences in the many shapes and varieties, and in the social sphere, differences in who may carry what kind.

They are very casual about making, using or losing these baskets, the most utilitarian being made easily in 10 to 15 minutes. Women make almost all baskets, but a man will not hesitate to sit down and make one to carry home fish or food. Whenever we got presents, they usually came in baskets and

they would usually end up just remaining about in corners until they rotted or someone carried something away in them. There are some kinds carried by the highest ranking men which have an intricate tight weave, taking about a full day to make.

Mats of all kinds are used to sit on or sleep on or make shields against wet and wind. They are found all over and usually a new fairly clean one can be found to accommodate the American guest. They are not hard or tedious to make and in the evening, tired by heavy work during the day, a woman will relax at this light work.

The woman's clothing is home-made of native materials. A cord forms the base work at the top of the skirt and from it are wrapped and suspended grasses or shredded leaves of various species, textures and lengths until a long full bodied garment with a shorter thicker fringe at the top results. In the yard or hanging from the branches in sunny spots, the raw material will be dried and bleached. Twisting, crushing and bruising action make the fiber limp before drying. A typical woman will have a shorter work skirt, a couple of partially worn regular ones and is in the process of making another. There is no hurry or rush, leaves being gathered when convenient and work progressing a bit at a time, so that no idea of just how long the process takes can be gained.

New skirts have a pungent hay odor and are greenish with a clean appearance. After a rain storm or so and a couple weeks wear, however, they become dirty, ragged, smelly and full of bugs.

Ordinary skirts do not have color at all, other than a possible bleached pandanus strip or so, but at a dance or other celebration color blossoms. Years ago they made their own dyes, but now most people still have some of the Japanese product which is simply smeared on and involves no prolonged boiling. Our dyes were quite unwelcome due to the complexity of the process involved and most were eventually thrown away. The results, as color photographs show, is colorful and contrasts sharply against the drab scenery.

A black cord hangs about the neck of any girl past the age of menarche and can be anything from a dyed strip of coconut cord to an old typewriter ribbon. The cord is essential for full dress once she is past menarche and the skirt is more than adequate for leg and body coverage. Just as one watches an American woman, walking or sitting, to see something not usually visible, so it was here also, and the result if anything was more frustrating.

Nowadays men wear the little loin cloths made of real cloth. It comes from the store, or may be an old Navy signal flag, which when flying from a housetop after a washing, might give a passing sea captain pause to think at the unusual signal combination displayed. There is a basic cloth and another more concealing one, whose color is socially significant, and beyond a certain stage of development a mass of bleached pandanus

hangs loosely between the legs, suspended in the loin cloth front and rear. When a man is really dressing up for an occasion he has a great fluffy sparkling white cluster, but run of the mill wear is often a shredded and frayed piece of rope from the boat pool.

Müller has extensive pictures of ornaments that are made from various materials. These seemed to be rare and valued treasures, so much so that though we wanted some they were never obtained. These things are kept for celebrations and are not part of daily life. Mostly they were bracelets and armlets of shell and necklaces made of carved or ground beads from various sea shells.

None of them are really beautiful, the workmanship being crude and the colors not spectacular. One young man tried for several days to make us some bracelets, the making of which required breaking a conical shell along a certain line of fracture. He failed badly and blamed it on the wrong conditions in the shell. These things are apparently like the women's hats in Boston, in that they don't get them any more, they just have them.

There is so much more prestige nowadays to a cheap wristwatch or copper bracelet that it can be predicted that no great return of enthusiasm for native ornaments will ensue. In rigging up a head ornament for a dance there is nothing quite like combining the red center spot from a Lucky Strike package with tinfoil from a Hershey bar, on a background of green cellophane, mounted on the doctor's throat swabbing sticks, all this being stuck in a band of woven leaves and fiber.

Body coloration is still basically done with orange turmeric powder. At a celebration, it is like being in a make-up room where one girl will get in certain appropriate positions while another will scrape powder from the chunk in her hand, and elaborate patterns on face and body will emerge. Where coconut grease and flower scents formerly were suitable, now our pomade or dime store perfume are in great demand. The really successfully made-up participant will shine and smell.

Transportation through the island is of necessity on foot for the natives. A Chamorro or so had a cart drawn by a cow with which to pick up coconuts. For water travel, the ordinary outrigger canoe is available. Now there is only a small variety that is not safe outside the reef in any bad weather at all. Formerly there were numerous sea going outriggers, such as are still abundant on the small eastern tributary islands. Almost all boats, large and small, were burned by the Japanese in the war years so that natives could not leave the island. As of today, villages are rapidly replacing the small, all-purpose canoe, and one of the large sea going canoes is being constructed on Rumung.

Formerly there were at least five named varieties of canoe, each with certain restrictions as to what it could be used for and who could ride in it. In obtaining a canoe, the procedure is that a man who wants a canoe and can afford to feed and

house the canoe maker makes a deal for the construction. The carpenter, along with several other men from the village, go into the jungle to select a tree of proper size and type. He does whatever magic is necessary, and the tree is cut and roughly worked into shape on the spot.

Finally, being still very heavy, it is dragged down to the spot where work will be completed, using for this pulling as many as 40 men. All these men help because they have been asked by the village chief to do so, and also they will get certain usages later when it is completed. This pulling is made less heavy through chants, horseplay, and tuba drinking, the carpenter seemingly always being in charge.

It is then covered by a rude shelter, and the carpenter together with his apprentices, then, using all the necessary magical practices, proceed to chop it into shape. Later it is painted and a sail made and it is dedicated and moved into the sea.

These canoes are excellent and the natives competent sailors. During a calm spell they pole wherever they have to go, but dislike it as being too much work.

In former times, they were great overseas sailors, extending their domination over islands several hundred miles to the east, and probably even to Ponape. Müller records charts which show their recognition of star constellations, wind directions, land masses, and currents indicating that there was little chance of their getting lost unless severe storms blew them completely off the route or destroyed their sails.

## B. Daily Life

It is always difficult to feel the tenor of life in a place that one has never seen, and among people with whom one has never associated. Is it a quiet easy going existence or one of hard work on plantations or in oil mills. The next several pages will try to give the reader a picture of a day's round or so that might make an understanding of the whole picture a bit easier. This will be abstracted from scattered observations on concrete families in several villages and districts.

Families arise at quite variable times depending upon weather and time of year. On a rainy morning, where there is some privacy, a man and his wife would stay asleep until 8:00 or 8:30 while the mother would arise at 5:30 as usual, chewing betel, getting ready for work of various kinds, chatting quietly with some other early riser.

The morning toilet is made on the beach by both sexes, but in different areas or at different times. Where a woman gets up after everyone is stirring she may be forced to go into the jungle to relieve herself. In Gachapar, one man had an old gasoline tank full of water as had a few other fortunate families, and in these cases, water was simply spattered over face and chest and the body dried on an old towel. Since this type of water supply is usually not available, and streams are often dry, nothing is thought of stepping out into the sea, close by where one urinated, to sponge off the body.

Getting up is a sleepy, slow process, about the first distrubing sound being from someone in the half light fixing the ever necessary betel chew to gain strength for a next move.

Very seldom is food eaten at this early time; usually a man just sits on his porch, talking to the wife or some other passer-by. A wife will be, if it is clear weather, preparing to go off for a morning's work in the taro or potato patch if the season is right.

There is no spontaneous, noisy bustle and hum that Malinowski heard and saw in his Trobriand villages, where people were all about a clearing. Rather, it is private, quiet and discreet, with sleepy grumpy human beings slowly starting another day where rigid schedules mean little.

Where the man goes to work for the Americans, his schedule is based on a long walk or boat ride to the proper area. He, of course, has to have a lunch, which is actually some taro cooked the day before, with a fish wrapped in a banana leaf together with bananas and oranges. It had been hanging in a corner of the cook house since the evening before.

Since there is a taboo against a woman's eating before she works in the Taro, or even at noon if she is going back that late afternoon or evening, there is an actual period of fasting until the return from the fields for the day. In the evening then she will eat a bit of leftover taro or sweet potatoes with whatever else is available. If she is overwhelmingly hungry, she may eat and perform neutral work in the afternoon.

A good woman also cleans her yard early, bending over with her knees kept straight, systematically brushing the whole area with her little broom bundle.

The majority of children now go off to school. The hour is not early by any means, since they drift in about 8:30 or so. Before departing they are very restless until a couple of cold chunks of taro are in their stomachs. Here also a lunch is necessary, consisting of about the same ingredients as their father's.

The work a man goes off to is varied. A chief bustles off to see a villager who is sick and then talks over various political matters with other people on his way. Down in Balabat one of the more energetic men would sit for awhile on his porch talking to the chief, then go down to work on the preliminary shelter close by where the new men's house would be built. Another would have been up early and out on the reef spearing fish or just returning from a night of spearing.

The district chief would then drop up to see the village chief and they would talk about strategy before one of them went in to the chief's meeting where so many problems have come up of late months.

In addition to going to the fields, a woman's tasks vary. Maybe the baby is sick and she walks into the hospital with it, or goes with her husband to visit her family which is often in a distant village, or goes to get new pandanus leaves for weaving.

If the children are off to school their day is fairly stereotyped and can be considered to be about the same as in a country school in America. If they remain at home, the age development and sex makes quite a difference. In general, throughout a village, adolescent boys below the developmental stage of putting on gal will gang together, with little fellows 8 to 10 years old tagging a couple of leaders 18 years old.

Girls stick much closer to their own age groups, with the major division being at first menstruation. It is seldom that either younger boys or girls are made to work consistently and hard. They dawdle on the way to school and back in the afternoon with no intention of saving time or getting home for a definite training schedule.

Older women who are at least partially enfeebled usually managed later in a morning to get to some neighbors, where as a usual thing, there will be three or four eating and chatting always ready to ask the passing visitor for some rope tobacco to season her betel chew. As the sun advances, they move on a little shaded porch where an old piece of canvas has been rigged, and where newcomers make an appearance and others drift away as time goes on.

Where group work was expected, as on the new falu,# men would start drifting in about 8:30 always parking for awhile to talk and chew betel. Then several would go out to take up their

#Young men's clubhouse.

tasks, and the slapping of the surf seemed to set an appropriate pace.

If the kids are around the village all day, they eat coconuts or drop in at home to snatch up a piece of taro or fish, then run out to swim or just lie around and talk. It was never apparent that there were games, as we would think of them that took up any great amount of time.

If the day is especially hot with no breeze at all, most women would return home about 11:00, then go back for further work of some kind about 4:00 or 5:00. Men from paid work would drift home at about 5:30 to 6:00, and other people sitting about the village or working elsewhere tended to come in about this time.

Eating is so irregular for all the meals that a pattern is hard to see. The only generalization possible is that as a rule a hot, large meal is available to family members sometime from 5:00 in the afternoon on until late at night. If any hot food is eaten in the morning, it is as a rule not before 9:00 or 10:00.

At night a pattern of fair regularity emerges for older women, in that they sit by the house and work on mats, skirts, baskets and such things, and as they work quietly, chat with some friend.

Men too old to be chasing after women tend to cluster together for talking. They visit about and if you went up quietly to almost any house, the hum of voices could be heard. Men spend about two-thirds of their time talking. Going down a path, everyone stops for a chat, and they do not often work alone. Where a falu stands, this is the gathering spot; where as in most cases today there is none, individual houses must serve.

The conversation can be animated, but as a rule it is quiet, intermittent and fragmentary, and as time goes on a member here and there will lean back for a quick catnap.

Men from about 16 to 27 seem to chase around at night more than at any other age. In Grachapar we could hear them shouting and slapping their arms clear over in the next village. A great many of the nights, however, these same men would sit around talking just like the older group. There was always the feeling present that the club house was the key to the pleasant passage of time for most men.

It is even harder yet to generalize on when Yaps finally go to bed. The groups that many times would stay around a camp, composed of all ages and both sexes, would stay until midnight or beyond almost every night. Many nights they would exhaust anyone trying to visit with them and would still be conversing long after any foreigner had fallen asleep.

In another village, on the other hand, a mother of three children was in bed usually by 10:00, probably because her husband was in jail and she was lonesome and moody without him.

The chiefs would have visitors who talked politics until late hours and seldom were abed before midnight. Two younger men would talk all night if possible, and a girl in her mid twenties liked nothing better than to stay awake until 3:00 or 4:00 a.m., but showed for some reason, more exhaustion than most people, liking to sleep late and for long periods in the afternoon.

The smallest child was allowed to stay awake or go to sleep as he felt, and it was always interesting to watch them gradually succumb to sleepiness and slump over on boxes or the hard ground, to doze and start awake at some shout or laughter from the group, immediately to fall back asleep.

The children stay up consistently later than in America, but make up the lost sleep by catnaps all through the day. This is markedly demonstrated, when one tries to work with one Yap all day and notices how many times he will get foggy, and how impossible it is to hold his interest without allowing a snooze.

## C. Social Organization

Now that an informal description of the Yap picture has been given, it will be well to deal with the relatively formal aspects of Yap social structure before presenting the more critical issues on the population decline.

Yap is divided into ten districts as a result of a German administrative move to facilitate the governing of the island. Of these districts, three are of predominant importance, being of late years usually in some sort of competitive race with each other for prestige and power in the eyes of the particular governing nation. One of the districts controls several outer atolls in the east and another controls one island to the south. This control has a traditional, magical and religious context and involves ceremonial visits with gift exchanges several times a year.

The chieftainships of districts are in general based upon the inheritance of certain land that is usually passed in the sib line. Usually there are several men available and of somewhat equal claim to the position. This fact results in squabbles which are among the most conspicuous phenomena on Yap. Nowadays, the succession depends both on local popularity and on decisions by the governing power. In addition to these district chiefs, other formal positions are filled traditionally by persons in the line of patrilineal inheritance of certain of the highest ranking land.

There is a kind of moiety system that used to play a prominent part in war activity. Each of the two sides try to line up its members for the large, somewhat formalized battles. Even today, a sort of verbal battle rages, with competitive jealousy. In all cases, the head of one or the other of these moieties is actually the district chief.

Each district has a number of villages. These have distinct boundaries and are ranked among nine classes. The organization of the village is such that there are usually several clearly divided named sections, each with its own club house, and each with a feeling of pride in its own membership and usually each showing a special friendship relation with certain others. There are many formal offices besides that of chief. The holders of these jobs are recruited from men holding the traditional pieces of land of high rank. The village chief has relatively little power except that of ordering and coercing people who tend to deviate from the rules, and to arrange for cooperative work or ceremonials.

The basic ranking of people comes from the ranking of the village into which they were born. That is, a man becomes a certain ranked man because he was born that way and remains that way throughout life. There were some cases of village rank going up or down as the result of loss or triumph in war, which has led to some dispute today as to the exact ranks, depending upon whether or not you recognize these changes as having been legitimate.

The most striking class differential is that of the lower four classes, usually designated as pimilingai, from the upper five classes. This is usually called a master-serf relationship. The serfs live in distinct villages usually not too different in appearance from all the rest, but on land that is considered to be of the lowest grades. That is, various families in high villages own certain low class land in certain of the serf villages. Theoretically the serfs can be thrown off this land if they fail to perform certain work and ceremonial services for their masters. Since a lot of them have gotten away to work for foreigners there is an actual shortage and sharing of these serfs among various families. In return for these services, the master is supposed to take a paternal interest in the serfs' welfare, seeing that he is healthy, well fed, has his share of purchased luxuries, and if in trouble is helped out as much as possible. In no sense of the word is it slavery. Crossing the boundary of master and serf in marriage is occasionally seen, but it has consequences that are severe enough to prevent it becoming a common practice.

As a person either male or female grows up, he encounters a series of relatively loosely timed age grades. They are named and are designated at certain times by insignia, usually a minor alteration in the clothing. In the male these are most openly marked by certain eating restrictions which separate him eventually from all women, and as he is growing up, from males in general older chronologically than he is. The big breaks are at about 20 when he comes out of the boy stage into that of the young man, and dons his gal (the hibiscus fiber draped from his loin cloth), and at the pumo'on stage when he is considered to have become a mature man at forty years.

In a female the dangerous stage is designated by dress and social manner, from the time when she first menstruates, to the time when menopause finally renders her relatively non-dangerous once more. In between, there are subtle grades that are ill-defined and only vaguely named. In general, insofar as contamination through eating is concerned, a boy is about the same rank as an old woman. The most stringent regulations in this respect are designed to keep a man apart from a woman past menarchy and before menopause.

The yegum system is mentioned in another context, but is the magical religious ceremonial system of progression by purchase that allows a man to gain higher rank with certain eating privileges, most usually important at large gatherings where there will be a pot for each grade, and where the groups of men will eat apart from each other.

Magic and Religion are covered adequately in other more pertinent contexts.

There are elaborate ceremonies that are usually lumped under the generic name of mitimit. These occur at anything from a funeral to the completion of a man's house, having as essential elements dancing and exchange of Yap money, together with a lot of sitting about and communal eating.

The inheritance of land and property is sketched in a discussion of the patrilineage. One thing that should be made clear is the type of land holding. Every bit of land is owned, in most cases being composed of varying small sized plots of great variety insofar as utilization or potential utilization is concerned. For all the eating taboos mentioned previously, the land must be suitably designated as fit to serve one grade of male or female. This has led to the conflict that is mentioned in a later section, where some people want this elaborate system to be abolished. The source of evil is that a woman must go to each graded plot separately for food, carry it home, return to another graded plot for another's food, carry it hom, and finally cook it in several pots. The final complication is that she must serve it to several people who may want to eat at widely different times. This custom has been considered by many as the most striking phenomenon on Yap, running a close second to the stone money. In actuality, it is probably of paramount importance in the social structure.

## The Kinship System

The Yap kinship system is best understood when two major elements are seen simultaneously; the system of kinship statuses with the roles appropriate to each, and the organization of the kin groups.

Since it is impossible to present these two major elements simultaneously, it has been decided to start with the system of kinship statuses. However, before the system of statuses is given in its full detail, a brief summary of the system as a whole will be presented so that the reader may have a general outline into which each particular part may be fitted as it is described.

Our problem of exposition is not facilitated by the fact that the Yap kinship system contains at least three features which are unusual to kinship systems in general. These unusual features will be given special treatment in the summary which follows in order that the reader may grasp their form and functioning as a whole before he is asked to grasp all the details.

The kinship terminology of Yap is of the Crow type in which MoBr and SiSo are given the same term, MoBrSo and MoBrDa have the same term as "my child," FaSi and FaSiDa have the same term as Mo, and FaSiSo has the same term as Fa.

Yap kinship terminology is a referential system; there is no vocative system of kinship terms in Yap. Persons are addressed by their personal names but may be referred to by their kinship terms.

The first unusual feature of the Yap kinship system is its division of all kin into "active" and "inactive" statuses.

The people in Ego's world are first divided into those who are kin and those who are not. Those who are kin are further subdivided into various categories each of which is given a name or kinship term. Thus, the status of "father" "father's brother" "father's sister's son" and "father in law" are all classified under one kinship term. Superimposed on this system is the distinction between "active" and "inactive" kinship statuses. At different times, and according to different considerations, any given category of kin, or any part of a category of kin (as "father" is one part of the category which includes "father's brother") may be distinguished as an "active" or as an "inactive" status.

The criteria distinguish an "active" from an "inactive" kinship status. First, the use or non-use of the kinship term appropriate to the status, and second, the playing or non-playing of the kinship role attached to that status.

An active kinship status is what we ordinarily think of when we think of kinship behavior. People "call" each other by their

respective kinship terms and act toward each other in ways which are socially defined as proper for their respective statuses or their relationship. In Yap, when a person may refer to another person by his kinship status, and when these persons play the proscribed kinship roles toward each other, they are in an active kinship relationship and each occupies an active kinship status with respect to the other.

An inactive relationship is one in which the kinship term is not used and the kinship roles are not played. An inactive status, with respect to ego, is counted as a kin and distinguished from a non-kinship status. But neither the kinship terms or the kinship roles are employed.

Thus, for instance, X can count 15 kin and 25 non-kin in his village. Of the 15 kin only 8 are in active relationships with him, while 7 are in inactive relationships with him. All 15 are still kin, and his behavior toward all 15 can be differentiated from his behavior toward the 25 non-kin who are of his own village.

The case of ego and his real father and his real father's brother illustrates the difference between an active and an inactive kinship relationship. When ego's real father is alive there is an active relationship between them. Ego applies the kinship term "father" to his father, and his father may refer to ego as "my son." The role of the father is to care for his small son's needs, and since this is an active relationship the father may be observed bringing fish for his son or opening a drinking coconut for his son. The father plays the "father role" toward his son.

So long as ego's real father is alive ego has an inactive relationship with his real father's brother. The kinship term for father's brother is "father" and ego does not refer to his father's brother as "father" so long as their relationship is inactive. Ego will address him by his personal name and refer to him by his personal name. Similarly, the role which is appropriate to one who occupies a "father" status, the care of the son is not played by the father's brother so long as their relationship is inactive.

When ego's real father dies, however, the relationship between ego and his father's brother changes from inactive to active. At this time, ego applies the kinship term for father's brother, "father," to his father's brother. At the same time, the father's brother begins to play the proscribed role of the "father" toward his brother's son.

This illustration introduces the next important feature of the active-inactive distinction; inactive relationships need not remain permanently inactive but may change to active ones, while under certain circumstances active relationships may change to inactive ones. In the following chapter the particular circumstances under which relationships change from active to inactive, and from inactive to active will be described and discussed more fully. At that place, too, some of the more important functions of this feature of the kinship system will be discussed.

The major kin groups are distinguished by the culture; the tabinauw and the genung. The latter is a matrilineal sib* while the former is another of the unusual features of the Yap kinship system which requires special introduction.

The Yap tabinauw is composed of a group of men who are related patrilineally, who trace their ancestry to a common known progenitor in the recent past and not to some mythical figure of the distant past, and the wives of these men for as long as the women remain married to the men, and the sisters of these men whether they remain unmarried at home or go elsewhere to marry, and the children of these men. The tabinauw includes, then, a group of nuclear families which are related in the patrilineal line and the out-marrying sisters of the husbands of these nuclear families.

The unusual feature of this group is the way in which it defines both the outmarrying women and the inmarrying women as part of the same group. In many other societies the group contains either one (the outmarrying women) or the other (the in-marrying women) but not both. In the former case it would be a lineage; in the latter a patrilocal extended family or a clan-barrio.**

The effect of defining both incoming women and out-marrying women as members of the same group is to give every married woman two group affiliations; one, the affiliation with the tabinauw where she was born and from which she came, and two, the affiliation with the tabinauw into which she has married. These affiliations are clearly of different orders. The affiliation of a woman with her tabinauw of birth is ordinarily never terminated. The affiliation of a woman with the tabinauw into which she marries comes later in her life and may be for such short duration as one or two weeks (if her marriage only lasts that long) or it may last for the rest of her life, if her marriage lasts that long.

The conditions therefore determine a person's membership in the tabinauw; birth and residence. For men only the condition of birth applies; for women, both conditions may apply.

The condition of birth is not limited in its meaning to the fact of physical residence, but explicitly denotes descent. Since, as we shall see, land ownership is the crucial test of a person's membership in the high or low caste, and since he takes his rank from the rank which the land he holds, and since he is or is not a magician, a chief, an expert ocean fisherman and so on depending on his ownership of certain pieces of land, inheritance of land is a matter of too great importance to tolerate ambiguous or elastic inheritance rules. And the rules of inheritance are stated in terms of descent, not residence. Hence,

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* Murdock, p. 47.

** Murdock, p. 74.

clear descent lines are a functional prerequisite to the efficient operation of the inheritance rules, which in turn are functionally prerequisite to the efficient operation of the class and caste system, the system of ascribed statuses and the land tenure system. Descent, then, is one of the two central elements in the Yap definition of the membership of the tabinauw; the other central element, as we have seen, is residence.*

The tabinauw is named after the piece of land of highest rank which it owns. Although the ownership of tabinauw land is nominally vested in the head of the tabinauw, the rights of the head are severely curtailed with respect to disposal of land.

The tabinauw is the unit within which inheritance and succession take place. Since the head of the tabinauw is the oldest male member, and since ownership of land is vested in him, his death raises the problems of inheritance and succession simultaneously. On his death, the head of the tabinauw is succeeded both with respect to the status of head of the tabinauw and owner of the tabinauw properties by the next oldest male of the group. This male may be his own son or brother, or the son of his father's brother, depending on who is the elder. Inheritance and succession, therefore, are one problem to the Yaps, so far as tabinauw land and tabinauw headship are concerned.

Tabinauw are distributed throughout a village without regard to their relationships with each other. Accidents of attraction may link two tabinauw by marriage and may leave other tabinauw unlinked. Although, as we shall see when we come to the problem of village organization, the tabinauw of one village are associated into major groups, perhaps three or four to a village, the associations of tabinauw into these major groups is not made on the basis of kinship but on the basis of traditional political allignment.

Although Yap culture singles out only the tabinauw and the sib as formally constituted kin groups, we can distinguish two others which are both parts of the tabinauw. One of these is the patrilocal extended family, the other the isolated nuclear family.

The patrilocal extended family is that part of the tabinauw which does not include the outmarrying women. It is essentially the group which lives on tabinauw land within one village. Since there is a slight preference for village endogamy, the outmarrying women may remain in the same village as their tabinauw of birth, but they will not, by virtue of the incest regulations, be able to marry men who are members of their tabinauw of birth.

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* That the Yap tabinauw represents what Murdock calls a "compromise kin group, there seems no doubt. Murdock, p. 66.

There are no culturally defined differences between the tabinauw and the patrilocal extended family, and the only observable difference which has any significance is that the women who marry out are on the whole in relatively less contact with the extended family members than the extended family members are with each other. The fact that the nuclear family is isolated (that is, it lives in its own house and apart from other houses) reduces the extended family members contacts with each other over what they might be if they all shared the same dwelling and hearth. Hence, for all practical purposes the patrilocal extended family can be ignored as a separate unit. It is included here only because it figures with such importance in the theoretical and cross cultural analyses which Murdock has undertaken.*

The nuclear family, on the other hand, can be seen to have different functions and different composition from either the tabinauw or the patrilocal extended family, and these differences are of the greatest functionally importance.

The nuclear family is termed "isolated" here to indicate its separate domicile, its separate economic activites, its own authority structure and its separate bonds or solidarity. It does not depend on the tabinauw except for the fact that the tabinauw owns the land on which it lives and from which it derives its food, and that the head of the tabinauw is in a father status to the head of the nuclear family and so may extercise parental authority over the nuclear family and is at the same time obliged to offer parental support and protection.

The second major kin group which is formally distinguished by Yap culture is the genung or sib. The sib is a matrilineal, totemic, non-local group whose major functions are the regulation of marriage and the control of certain lands which give their owners the right to the status of district chief. The succession of the office of district chief is to the next eligible sib member of the village within which the sib owned land is located. Succession is not entirely determined by sib membership. Village membership, age and mental competence are other criteria which determine who succeeds to the post of district chief.

The sib is on the whole relatively less important than the tabinauw. It governs fewer of the daily activities and intrudes less conspicuously into the actions of the people than does the tabinauw. In addition, sib membership is treated as a secret and this fact tends to enhance its non-conspicuous nature.

Marriage is patrilocal and confined to a member of one's own village, or a nearby village, a member of one's own class or no more than one class lower for a man, no more than one class

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* Murdock, pp.

higher for a woman, one's own caste and marriage to a member of one's own sib or one's own tabinauw is considered incestuous, and incestuous relationships are punished not by men, but by the offended spirits who will, sooner or later, kill the offending couple.

Divorce is at the option of either party and consists only in the return of the woman to the tabinauw of her birth. Divorce, when the couple have no children, is easy and unopposed; divorce when the couple have children is opposed by both the tabinauw of the husband and the tabinauw of the wife; these pressures do not constitute unavoidable barriers, however, and if either a man or woman want to divorce they are able to do so at their initiative and in spite of the informal pressures put on them.

Adoption is permitted and common, but the couple's first child may not be adopted. When a child is adopted by a woman, the child retains the totemic affiliation of its real mother and gains the sib and totemic affiliation of its adopting mother, but loses the sib affiliation of its real mother. The child of an adopted woman has both the totemic and sib affiliation of the woman who adopted the mother, and does not retain its mother's real mother's totem.

The third feature of the Yap kinship system which is somewhat unusual is the special relationship between the ethical system and the bonds of kinship.

It is helpful at the outset to separate the grounds on which authority is legitimized from the "justifications"* which are invoked for the exercise of legitimately constituted authority.

By "justifications" are meant the immediate, verbalized "reasons" for acting, not the ultimate functional effects or the unconscious motivations of the actor or anything more than the simple explanation which the actor himself gives for his action.

By and large, the justifications for authoritative action constitute the socially legitimized conditions under which authoritative action is permitted or required. In America, for instance, a mother may sometimes be heard to say to her child, "Do it because I say so!" or a policeman may knock on a door and say, "Open up! Police." In both these instances the justification for authoritative action is given as the status of the actor, in the one case the mother and in the other the policeman. A somewhat different kind of justification is the injunction, "Open in the name of the Law!" Here the Law is given as the justification for the commanding action.

In Yap the justification for legitimate authoritative action is seldom if ever the status of the authority--the chief, father, parent, owner--but is most often the "rightness" or "wrongness" of the action toward which authoritative action is directed.

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* This term was suggested by David Aberle.

Thus, for instance, I was told by informants that a father may strike his child "because the child did something wrong." When I asked if the father could strike his child, "because he is his father," I was flatly contradicted. "No!" "The father may only strike this child when the child has done something wrong." The justification for authoritative action does not reside in the status of father, but in the wrongness of the child's action. This does not mean that anyone may strike the child who has done something wrong, for this is explicitly not the case. The father is the legitimate authority, but his authority may only be exercised legitimately with reference to the ethical system which appraises the action of the child and finds that the child is wrong.

One function of the separation of the status of the authority from the justifications in terms of which his authority may be exercised is to restrict the power of the authority to the predetermined and universally anticipated areas defined in the ethical system. Being vested with legitimate authority in Yap is not in itself sufficient grounds for action; in addition, the action itself must be justified and justifiable in terms of the ethical system which is separate from the status of the authority.

Since authoritative action depends on the ethical system we must turn to it briefly to see how it affects authority within the kinship system.

The ethical system of Yap is stated in absolute, or universalistic terms. The code is on the whole relatively free from qualifications of rank, kinship, or special status. An action which is right is right for all concerned, and an adtion which is wrong is wrong for all concerned. Hence, the subsequent behavior of concerned parties is first determined by the rightness or wrongness of the initial action and only secondarily determined by other considerations.

If a man does something wrong, the first consideration in the eyes of those about him is the fact that what he did was wrong. Following from the wrongness of the action, the roles of the condemned parties are defined; a wrong doing must be amended and compensation offered to the offended party. The role of the person who was offended against or wronged is to receive the compensation and amends, and if these are not forthcoming, to go and punish this further wrong doing.

When a person is right, it is the obligation of friends and kinsmen alike to help him and support him. When a person is wrong, there is no obligation on the part of anyone, friend or kinsman to support the wrong doer. It is the value judgment of the initial action as being right or wrong which determines the role of the friend or the kinsman.

Since a wrong doer can expect no help and no succor from either friends or kinsmen, he must be far more careful that his actions conform to the ethical values than if he could count on support from his kinsmen, no matter what he did. Hence, the

strength of kinship bonds are tempered by the conformity of the actor to the ethical values. This consideration alone goes far toward weakening the solidarity of the kinship groups.

Although the general orientation of action is determined by the rightness or wrongness of the initial act, the roles of concerned parties are differentiated within the two major categories of right and wrong.

The role of the father of the wrong doer is to make amends and to pay compensation for the wrong doing. The role of the wrong doer is to get out of the way and to keep quiet and let his father handle it. When a man is a wrong doer, only his father, among all his kin, is involved. There is no defined role for brothers, mothers, sisters or members of the wrong doer's kin group as a whole. The father must make the amends and pay the compensation quickly and without delay, and he must do so by going to the offended party. The offended party, who is right, waits a short but reasonable time for the father of the offender to appear. Since the "right" thing for the father of a wrong doer to do is to make amends and pay compensations as quickly as possible, the wrong doer does a further wrong, and his father does an initial wrong, when no amends or compensation are produced. Up to this point the role of the offended party is to wait and if it comes to receive and accept the apologies and the compensation. The father of the offended party may receive the apologies and compensation for his son or just stand by to advise his son if they wish it this way.

If, however, the wrong doer fails to make an appearance with an apology and compensation within a reasonable time, the father of the offended party is obliged to help the son punish the wrong doer both for the initial wrong doing and for the subsidiary wrong of failing to make amends. The father may or may not go along with the son, but the son goes with the father's approval, his advice, his mature judgment on the chances of effecting punishment without undue risk, and so forth. It is the brother's and friends' obligation to go along with the offended party and help in the fight which proposes to punish the wrong doers. It is hardly surprising that Yaps believe that "right makes might" and that when a person is in the right he is somehow stronger, for not only has he his friends and kinsmen beside him, but he also has his ancestral ghosts and all the supernatural aid that they can muster. His opponent, being wrong, can get no help from kinsmen and only the condemnation of his ancestral ghosts; the wrong doer is without kinship or supernatural support.

There are, of course, times when both parties claim the right, but observation of a series of events showed surprisingly few cases where both parties claimed to be right.

One further point warrants some attention: there is no agency external to the immediately concerned parties and their kinsmen which is empowered to settle or establish matters of right and wrong. Chiefs do not have this power, nor is there a police force, nor are there judges outside the kinship group. This situation leads to two important consequences.

First, a high degree of consensus is absolutely necessary for the effective control which the ethical system is charged with maintaining. The whole effective community must subscribe to the rules of the ethical system and act in accordance with them, for there is no institutionalized force external to the kin group which can enforce the rules.

Second, there must be, within the kinship system, that authority to enforce conformance with the ethical system which is not found outside the kinship system. This is necessary first because of the necessity for teaching the societies new recruits--the children--the content of the ethical system and socializing them to the point where they join the community in subscribing to the ethical system. This is also necessary because breaches of the ethical values are left for the kin group to act on--they are socially defined as the unit that either supports or abandons a right-doing or wrong-doing member, and they are the group which is expected to enforce ethical behavior on the part of those who come in contact with the kin group. We will find later that the authority within the kinship system is vested exclusively in the status of the parent and that the bulk of the authority lies in the hands of the father.

Before closing this introduction to the Yap kinship system a word must be said about the place of historical factors in shaping it.

According to Murdock* probably antecedent to a system such as will be described for Yap was a system in which descent was matrilineal, residence matrilocal or independent, and the matrilineal kin group organized on a non-local basis. Coordinate with these features, it is likely that land ownership was relatively unimportant compared with the present situation, and that political organization was loose and relatively less significant than it is today.

This hypothesis will be considered as sufficient to answer the question of how the Yap kinship system came to be the way it is today. Our primary concern here is not, however, the historical changes which have occurred, but rather the structural and functional analysis of the situation as it may be observed now.

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* Double Descent, AA. p. 561, 1940.

## Organization of the Family

The Yap kinship system is one of double descent in which the localized patrilineal lineage* is the inheriting, succeeding and land-owning unit and is of considerably greater general importance than the matrilineal, non-local totemic descent group which will be called hereafter, the sib**. Marriage is patrilocal, and polygyny is permitted but seldom practiced. The leverate is institutionalized but optional with either, while the sororate is not institutionalized and treated as an ordinary marriage which is permitted when it occurs.

With this brief and highly abstracted summary, we may proceed to a closer examination of the kinship system, starting with the kinship terminology.

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* Particular attention is called to the fact that the terms like "patrilineal lineage" or "patrilineage" and "sib" which will be used to designate kinship units, are given special and specific meaning here which is at variance with certain common usages. The term "lineage" is used throughout this work to describe the Yap tabinauw, and since the tabinauw is a patrilineal group, the term lineage will usually be preceded by the prefix "patri-." The Yap tabinauw is a patrilineal group which traces its ancestry from a known, real progenitor; it is associated with certain lands to be defined later, all of which occur within the boundaries of one village, although one village will contain many different tabinauw; it includes in the group all who were born into it, regardless of their present marital status or place of residence at the time, and it includes in it all women who have married into it for so long as those marriages obtain.

** The term "sib" is used with reference to the Yap genung alone, regardless of the variety of definitions which this term suffers from. The sib, or genung, is a kinship group which traces its descent matrilineally to a mythical ancestress in the very distant past. Marital status and residence do not affect sib membership; members of a given sib are found more or less at random throughout Yap.

## Yap Kinship Terminology

The kinship terminology of Yap is of the lineage type with strong generation features and the cousine terminology is of the Crow type. The following list of kinship terms and their referents may be compared with the chart (Fig. 1) for clarity. The Yap term is given here in the first person possessive form for all terms which gramatically require referential suffixes (those terms which end in "g") and in the stem form for all those terms which do not require referential suffixes (all terms which do not end in "g"). The terms are given in the dialect of rumung. Before each term is a number which corresponds with those on the chart (Fig. 1).

| | | |
|---|---|---|
| 1. | chitimongig | fa; fabr; mosihu; fasihu; fasiso; spfa; spfabr. |
| 2. | chitiniagig | mo; mosi; fabrwi; fasi; fasida; spmo; spmosi. |
| 3. | fakag | ch; brch; mobrch; mosichch; fabrchch; fasichchch; sichch; (woman speaking) sich. |
| 4. | wolageg | sib; fabrch; mosich; fasichch; and all members of own sib not otherwise related. |
| 5. | ngani | older sib. |
| 6. | wain | ygr sib. |
| 7. | waengog | mobr; mobrwi; (man speaking) sich. |
| 8. | tutu | fafa; mofa; fa fabr; mofabr; sp fafa; spmofa. |
| 9. | toitauw | famo; momo; fafasi; mofasi; spfamo; spmomo. |
| 10. | tungin | chch; brchch; fabrchchch; mosichchch; mobrcach. |
| 11. | mugurl | the children of all <u>tungin</u> (10). |
| 12. | leengog (or figuringog) | sp; spouses or siblings of same sex as speaker; siblings of spouse who are of same sex as spouse. |
| 13. | wechuma | All relatives by marriage. |
| 14. | tuguru | plural wives. |
| 15. | ngayil | siblings born of the same mother. |
| 16. | ienungog | (woman speaking) brwi; husi. |
| 17. | gigi ni Mfen | fasich. Used as a collective term and designates these persons in a context of land rights. |
| 18. | garewag | (woman speaking) Husi when that woman is deceased and at her funeral only. |
| 19. | gil'lai | (Man speaking) si; sihu. Used only in speaker's wedding ceremony. |

The last three terms listed have special and restricted meanings and their inclusion among the kinship terms is arbitrary.

The term ngayil, siblings born of the same mother, is a derivative term and a contraction of two words meaning "same belly."

Kinship terminology is extended to the class and caste system; thus, the relationship between the lineage which owns the land on which a lower caste family lives is described as "father" to the lower caste "child." Similarly, the highest ranking village of the district is referred to as the "father" of the lower ranking villages within the district, the "children." The relationship between certain lineages in the villages of Gachapar, Onean and Guror which own eastern islands such as Ulithi, Fais, Woleai and Ngulu, is described as that of father to child.

Rules of Reference for the Use of Kinship Terminology

It should be apparent that a Crow type of terminology needs special integration if it is to be used in a kinship system which stresses the patrilineage as the inheriting, succeeding and land-owning unit, and where marriage is patrilocal and where the matrilineal sib is of reduced importance.

The rules of reference perform the major part of those integrative functions, and two of these rules in particular appear to be central to the whole integration.

The first of these is that the kinship terminology is a system of reference, and not address; there is no vocative terminology as such. Persons are never addressed by kinship terms, but by their proper names or nick-names.*

The second of these rules is that the kinship term for a relationship is never used unless the relationship is active and in force and not merely traceable. This rule will be clarified further by the discussion which follows.

In addition to these two general rules of reference, there are five other specific rules which will be stated in their generalized form and followed in each case by a graphic example.

Only one man can occupy the active status and be referred to as father at one time. As long as the real father is alive, he alone is referred to by the term for father. When the real father dies and is succeeded by his next youngest brother, this successor is then referred to as father.

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* Although it was said that a child might use the terms nena and papa for "mother" and "father" respectively until he learned to pronounce the proper names of his parents, I never heard these terms used, while Mr. Hunt tells me that he only heard them used on one occasion. We both, however, often heard infants being taught and using the names of their parents.

In Chart (a) Fig. 2 below, the children, 3, refer to the man, 1, as father and che children, 4, refer to the man, 2, as father. The dotted lines of descent also indicate the lines of reference. In Chart b, to the right, the man, 1, has dies and been replaced by his next younger brother, 2. It is at this time that the children, 3, refer to 2 as father, and not before. It is at this time that 2 commences to act in the role of father toward children, 3, and not before, and they in turn begin to act in the child's role toward their new father, 2.

Fig. 2

Chart (a)

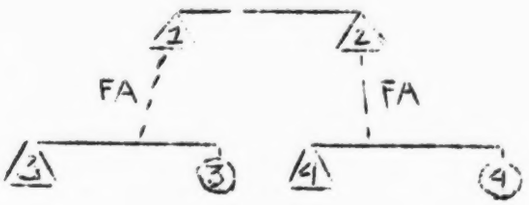
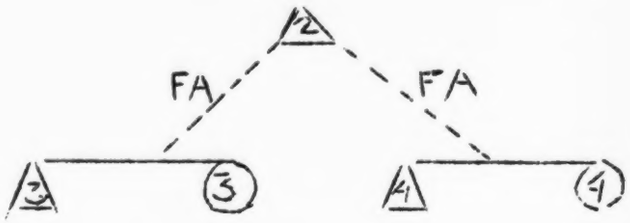



Chart (b)




Only one woman may occupy the active status and be referred to as mother at any one time as long as the real mother is alive and married to the man ego refers to as father, she alone is referred to as mother. If, through divorce or death, the real mother is no longer married to father, and if father has remarried, then the real mother may not be referred to as mother so long as father's current wife is alive and married to him. Father's new wife is now referred to as mother. If father is unmarried after the divorce of real mother, real mother may continue to be referred to as mother so long as father has no new wife.

In Chart (a), Fig. 3, following, the normal reference with respect to real mother is shown; the children, 3 refer to woman, 5, as mother. In Chart (b), Fig. 3, to the right, real mother, 5, of children, 3, is divorced and father, 1, has remarried, marrying woman, 7. The children, 3, refer to woman, 7, as mother, and do not refer to woman, 5, as mother any longer. Note that father's sister, although she is included in the definition of the kinship term, mother is not referred to by that term.

Fig. 3

Chart (a)

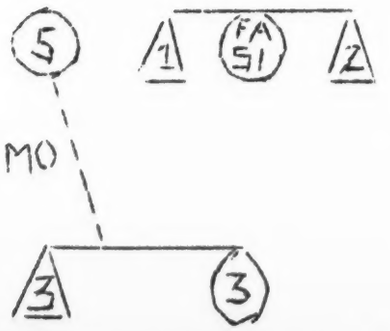
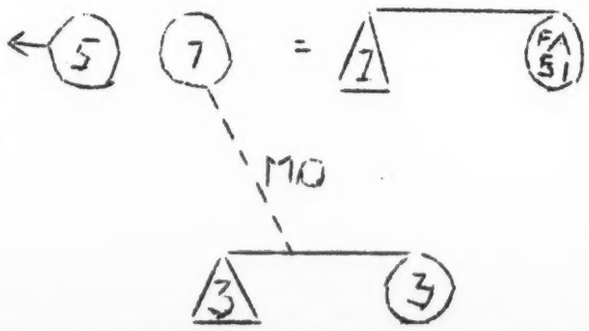



Chart (b)



(3) If, on the death of the father, father's younger brother marries father's widow (by the rules of the levirate), father's widow alone, and not father's younger brother's first wife, is referred to as mother. But if on the death of father, mother returns to her own home, as if in divorce, then she is no longer referred to as mother, but the term is applied to the wife of father's younger brother.

Chart (a), Fig. 4 below, the use of the kinship term for mother is shown in that case where the widow, 5, has married her deceased husband's younger brother, 2, by the leverate. Woman, 6, is younger brother's wife. Children, 3, refer to woman, 5, as mother, man, 2, as father, and <u>do not</u> refer to woman, 6, except by her proper name. In Chart (b) widow, 5, elected, by the rules of the leverate, not to marry her deceased husband's younger brother, 2, and so she returned to her own home. In this case, children, 3, refer to man, 2, as father and woman, 6, as mother but make no reference to woman, 5, except by her proper name.

Fig. 4

Chart (a)

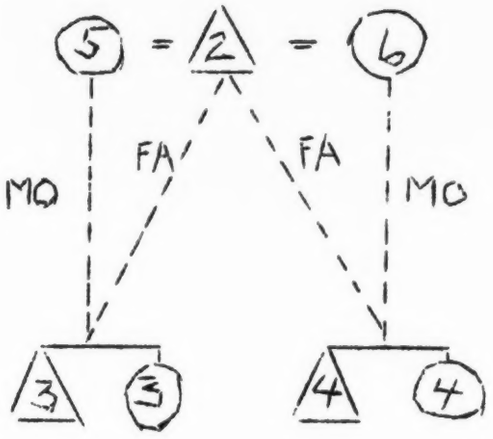
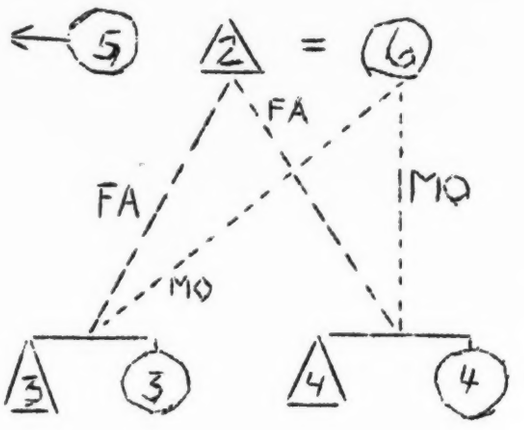



Chart (b)




(4) As long as ego's real father is alive, only ego's real siblings (<u>wolageg</u>, children of the same father) are referred to by the terms for sibling (<u>wolageg</u>, my sibling; <u>ngani</u>, my older sibling; <u>wain</u>, younger sibling). On father's death, however, ego's real siblings plus the children of the man whom ego now refers to as father are included in the reference. The children of the succeeding father's living brothers are not included and the succeeding father's living brothers are not referred to as father (ref. rule 1).

In Chart (a) Fig. 5 below, the situation both with respect to father reference and sibling reference is given where two brothers are both alive. Children, 3, refer to man, 1, as father and refer to each other only as sibling. Children, 4, refer to man, 2, as father and only refer to each other as sibling. In Chart (b), however, man, 1, has died and children, 3, and children, 4, refer to man, 2, as father, and children, 3, include children, 4, in their reference to sibling, and children, 4, include children, 3, in their reference to sibling.

Fig. 5

Chart (a)

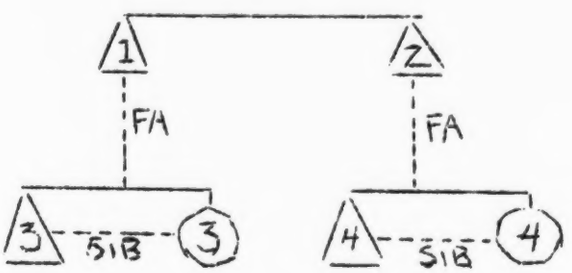
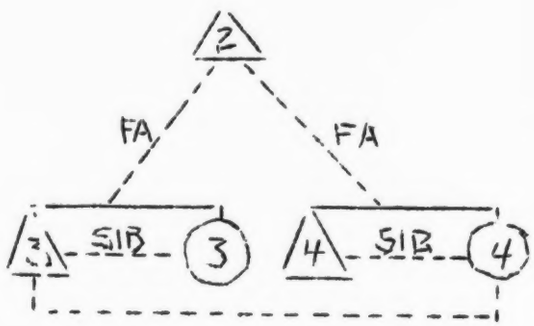



Chart (b)




(5) The term spouse is only used by one person to refer to that person of opposite sex with whom a marriage relationship obtains.* Although ego's older brother's wife is classified as spouse with respect to ego, an explicit sanction prohibits reference to her by that term. That sanction states that "older brother's wife is like a mother." When asked why, informants replied laconically, "when older brother dies, his widow will marry younger brother." It is permissable, however, for older brother's wife to refer to husband's younger brother as spouse, but she will rarely do so except when their age discrepancy is so great that the reference is made as a joke. This rule seems clear enough without a diagram.

The sanction that "older brother's wife is like a mother" to younger brother, and the "explanation," "because when older brother dies his widow will marry younger brother" provides a key to an understanding of the whole structure of the terminological system as well as the structure of certain of the major kinship groups, as will become clear from what follows.

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* This holds where a man has plural wives. He uses the separate term "eusuru" for them.

## Certain Major Functions of Kinship Terminology and Rules of Reference

The patrilineage is an age-ranked structure with the oldest male of the group at its head. From the point of view of male ego, for instance, there is usually someone older than he and someone younger than he; the exceptions are, of course, the oldest and the youngest male in the patrilineage.

It is this age-ranked patrilineage which is the functional center of the kinship system. Two groups of persons occupy kinship statuses with respect to the patrilineage: first, all those who have traceable kinship ties, that is, all fathers. brothers, mothers sisters, cousins children, grandchildren and so forth. The second group comprises that portion of the first group who occupy active and in-force kinship statuses as defined by the rules of reference given above; that is, those persons who are actually referred to by their kinship terms as opposed to those persons whose relationship is traceable but who are not included in the terminological reference.

There are then, for any given male ego (except the head of the lineage) at least two sets of fathers, two sets of mothers, and two sets of siblings; there is the one man who is referred to as father and who acts in the role of father, and there are the men who by the rules of reference are terminologically fathers but who do not act in that role nor are they referred to by that term (that is, fathers brothers, mothers sisters. husbands, fathers sisters husbands, and so forth): there is the woman who is married to father, and who may be the real mother, and there are the women who are terminologically classed as mother but who are neither referred to by that term nor act in the role appropriate to that status (that is, mothers sisters, fathers sisters, fathers brothers wives, and so forth); and there are the real siblings to begin with, and perhaps the children of one of father's brothers who may have died as against those cousins who are terminologically siblings but who are not referred to by that term.

According to the definition of the kinship roles appropriate to each of the statuses signaled by a kinship term,* an older brother is "like a father" to his younger brother. The older brother is responsible for the younger brother, is the one from whom various permissions are sought by the younger brother, and in general is delegated with parental powers and responsibilities with respect to his younger brother.

It follows directly from this, that, since an older brother is "like a father" and acts like a father, older brother's wife is "like a mother" and must be treated "like a mother" and it is with respect to this that conflict would ensue if a woman who was treated like a mother were referred to as spouse; hence the sanction that older brother's wife must <u>not</u> be referred to as spouse can be viewed as a conflict avoiding device.

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* This is set forth at length below.

The "explanation" for this sanction, "when older brother dies, younger brother will marry her" would seem at first glance to precipitate the very conflict which the sanction was interpreted as avoiding, for the leverate rule permits the widow of a deceased older brother to marry the surviving younger brother. Actually, although there may be psychic conflict for the participating individuals, there is no functional social conflict, for the death of the older brother terminates the "like a mother" status of older brother's wife and puts her in a new and explicitly redefined position with respect to her husband's younger brother, a status that makes it possible but optional for her to shift to the role of spouse. Anticipating a later finding, it is worth noting at this point that another emphasis of the kinship system comes into play here, and that is that wherever there is a conflict or potential conflict between a conjugal relationship and a parent-child relationship, the former is sacrificed to the preservation of the latter: to maintain a mother-child relation, older brother's widow is motivated to marry the surviving younger brother.

To continue the analysis of the terminological system and the rules of reference, the reader is referred to the diagrams in Fig. 6, p. 46.

If the patrilineage is assumed to be made up of three brothers and their wives and children, brothers 1, 2 and 3, age-ranked in that order, and wives A, B and C, then the lines of relationship which are seen on the charts define the persons who will be referred to by their kinship terms and who stand in active kinship relationships with each other. Children 4 will refer to A as mother, 1 as father, and each other as siblings. Children 5 will refer to B as mother, 2 as father, and each other as siblings. Similarly for children 6. Brother 1 will refer to A as spouse, 2 and 3 as siblings, and children 4 as "my children;" brother 2 will refer to B as spouse, brothers 1 and 3 as siblings, and children 5 as "my children." Similarly, brother 3, In this diagram man 1 is the oldest of the three brothers 1, 2 and 3. Hence, he occupies the status of "head of the patrilineage," and 2 and 3, being younger than he is, regard him as "like a father" and he regards them as "like my children."

In Chart (Y), the oldest brother and head of the patrilineage has died and been replaced by the next oldest brother, 2. As the chart indicates, woman A has married the surviving younger brother 2 by the leverate and children 4 now refer to man 2 as father, continue to refer only to woman A as mother, and now include children 5 among their siblings. Children 5 continue to refer to 2 as father, B as mother, but now include children 4 in their reference to siblings. Brother 3, his wife C and their children 6 have not been affected; children 6 refer only to 3 as father, only to C as mother, and only to each other as siblings.

In Chart (Z) brother 2 has died and the new head of the lineage is surviving brother 3. Both widows A and B have elected to remain in the lineage and have married surviving brother 3 with

Fig. 6

Chart X

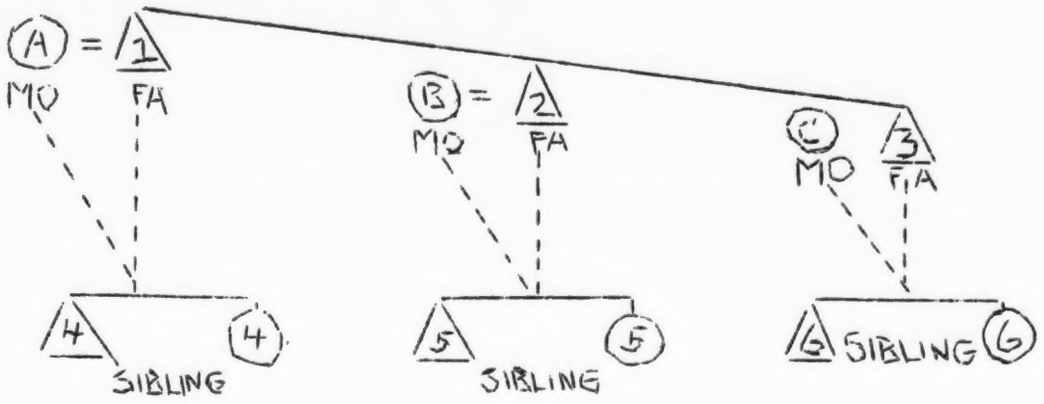



Chart Y

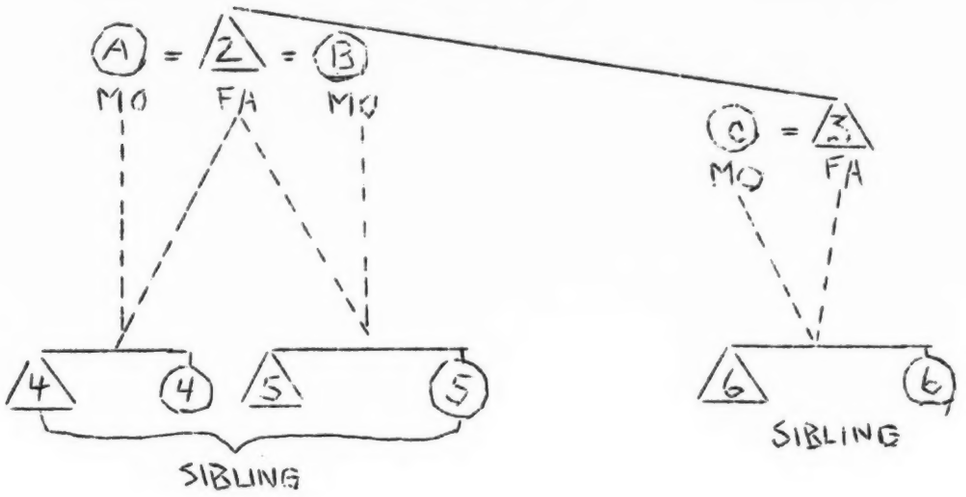
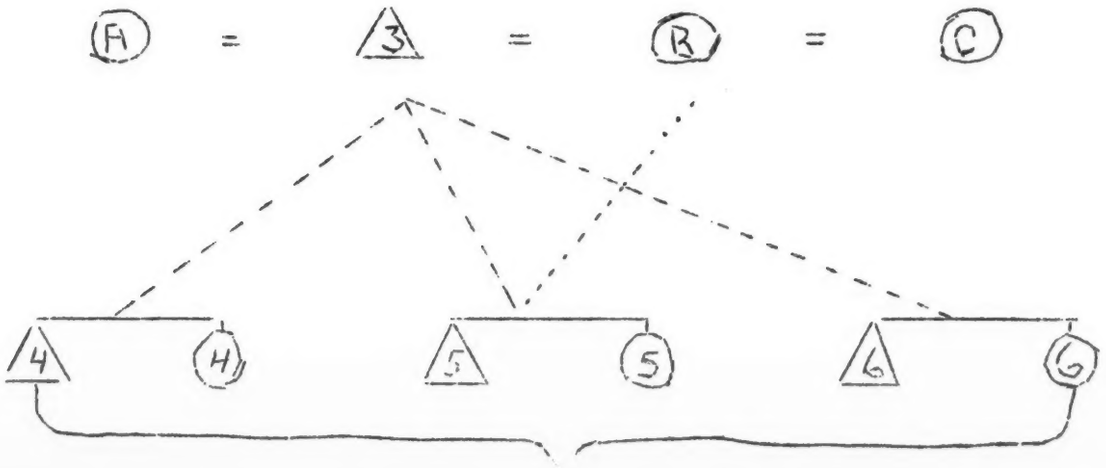



Chart Z



his concurrence. Children 4 refer to 3 as father and A as mother and include in their sibling reference children 5 and children 6; children 5 refer to 3 as father and B as mother and include children 4 and 6 in their reference to siblings; children 6 refer to 3 as father and C as mother, and include children 4 and 5 in their sibling reference. Reversing the perspective, 3 now refers to children 4, 5 and 6 as "my children," women A, B and C individually as "my spouse" or collectively as "my plural wives;" woman A only refers to children 4 as "my children" and to 3 as "my spouse;" woman C refers only to children 6 as "my children" and to 3 as "my spouse;" women A, B and C refer to each other as "my plural wives."

From this account of the operation of the kinship terminology and the rules of reference with respect to lineage structure, it is apparent that the first major function of the kinship terminology and the rules of reference is to provide a core of operative kinship relationships within the nuclear family (father, mother and children) so that for the mother and father positions, only one person occupies these statuses at any one time. Second, it sets up a reservoir of potential mothers and potential fathers and potential siblings from among the members of the patrilineage, from which replacements are drawn to fill vacant statuses in the event of death. No one except the head of the patrilineage goes without an active, operating mother or father.*

This reservoir function of the kinship terminology and the rules of reference may be viewed as a device which gives the greatest emphasis to the roles of the nuclear family statuses, and which make them prototypic in terms of the generalizations of kinship functions to other areas of the culture such as the caste and class system.

But the emphasis on the nuclear family roles is not without selectivity; certain of those roles have primary and certain have relatively secondary importance with respect to this system. It is possible to be without a wife or a husband and it is possible to be without children. But given children, it is impossible to be without a living mother or a father (except for the head of the lineage and in his case the mother and father are a pool of patrilineal ghosts). If ego is without children, then he does not occupy a parental status, and not occupying a parental status, he is practically without significance for this system. But if ego has children, then it is only with respect to those children, as a parent of opposite sex to them, that the spouse is important.

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* Even the head of the patrilineage, however, has the functional equivalent of an active father and mother above him since he has a pool of patrilineage ghosts toward whom he takes a child role, entreating them to mediate with other supernaturals on his behalf and on behalf of the patrilineage. The most important of these ghosts are usually his own deceased mother and father.

This can be seen in another way. The functioning of the reservoir system lays stress on the single father and the single mother, with respect to the children; the joining of forces which the reservoir function permits does not thereby dilute the relationship with the parent from the child's point of view. The child does not get two mothers when his father dies and his mother marries an already married father's younger brother. The mother-child relationship remains the same from the point of view of the children. Even if the real mother returns home, leaving the system, the children still have only one mother. On the other hand, as can be seen from Fig. 6, the relationship that can be cumulative is that of husband and wife; a man may be married to one, two or more women by the leverate. But it is significant that the number of wives who any one man has is irrelevant to the parent-child relationship; whether he has one, two or three wives doesn't matter from the child's point of view, the child always has only one mother. As we shall see later, in any situation of stress, it is invariably the conjugal relationship which is sacrificed to that of the lineal relationship.

It is noteworthy that the effect of the reservoir function is neither to strengthen the patrilineage at the expense of the constituent nuclear family, nor to strengthen the nuclear family at the expense of the patrilineage. It is not that a status is taken away from one group and given to another; it is rather that the kin next closest to the nuclear family assumes an additional duty without relinquishing any of his former responsibilities. The man who takes over the father's role of his deceased brother toward the deceased brother's children, and the husband role toward the deceased brother's wife does not relinquish or abandon those roles with respect to his own, original nuclear family. What he does, in effect, is to incorporate the children into his own nuclear family and assume the husband's responsibilities toward his new wife as well as retaining them toward his former wife.

Actually two reservoirs appear to exist from the point of view of any nuclear family member; that of the patrilineage members and that of the residee of traceable kin who are not patrilineage members. This division may seem to diminish the immediate resources of the reservoir from the point of view of the nuclear family, but this is not the case, as will appear later when some of the effects of depopulation on the kinship system are traced. What happens is that if the first reservoir of patrilineage members is empty, the second, more remote reservoir of non-patrilineage members is drawn upon in the same way, but only in the absence of members of ego's patrilineage.

## Residence Rules, The Forms of Marriage, Divorce and Adoption

Marriage is patrilocal in almost all cases, but matrilocal residence is permitted when a young man marries a girl from the village from which his own mother came. This is expressed as a "giving back" or "exchange" of people; the village lost the young man's mother, but regains the young man. Matrilocal residence is tolerated but not considered proper in the case of a man who is willing to stay in his wife's home on her insistence. Such matrilocal marriages are rare, but do occur.

Marriage is forbidden to sib mates as well as to persons who are members of the same patrilineage. Although there is no formal rule, marriage between persons of the same or nearby villages is preferred.

Ideally, marriage of a man to a woman of one class* lower than his, or equal class, or one class higher than his is permitted. Cross caste marriage is prohibited, and marriages where the partners are two or more intervening classes distant from each other are discouraged. Actually, most marriages take place within this ideal, although in rare instances cross caste and class distant marriages do occur.

Marriage may take place at any time during the life of the individual. A man who knows of a bright and well behaved girl, usually in her eighth year or older, may arrange with her parents that she marry his son. She comes to live with her young husband's family and, at the time of her first menses, is formally married to him. If she or her family wishes to terminate this arrangement, however, either may do so at any time.

Such child marriages are commonly made because the parents think the children will make each other good spouses. One informant described parents of a child-marriage as "greedy;" they wanted to be sure that no one else got such a well behaved and bright girl as a wife or such a good child for a husband. Only rarely do these child marriages last; most commonly they break either before or just after the girl's first menses.

In such child marriages, the children continue to treat each other as children and no pressure is put on either to assume a marital role toward the other.

Plural wives are permitted if a man has the consent of the first wife to take additional wives. Usually such permission is reluctantly if ever given, and more than one wife has left her husband in a huff when he brought a second wife home with him. Plural wives are rare, and when they occur are almost always the wives of mature men who have agreed to the levirate arrangement for the sake of the children of a deceased brother and for reasons of expediency, not sentiment.

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* The class and caste system will be discussed at length in a later chapter.

The levirate, called munufungich, is optional with both persons concerned. Properly the widow may marry the next oldest surviving brother of the dead husband, or if he does not wish to enter into the marriage, with any other surviving brother who is agreeable. Lacking a surviving brother, the widow may marry the deceased's mother's brother, but this to my knowledge does not happen. However, if either she or the brothers fail to agree to a marriage by the leverate, or if brothers are lacking, the widow may remain on the husband's land with her children.

As was suggested above, the primary motivation for entering into the levirate is "for the sake of the children" and not from sentiment. The conjugal relationship which the leverate establishes is subordinated to the primary and of maintaining the mother-child relationship. Should both parties desire the arrangement for sentimental reasons, there is no obstacle; but should they dislike each other, this must be suppressed in the interests of keeping the mother with her children.*

Actually, the levirate is entered into primarily by women above 30 or 35 years of age, and rarely by younger women, even when they have children. The fact that the ideal is to subordinate the sentiments which are expected in the conjugal relationship to the interests of the lineal relationship does not prevent many younger women from violating this ideal.

In addition to the usual form or marriage, by "free choice," and the levirate, a third form called wuch exists. This form only occurs when a woman dies leaving an infant. In this case the widower may go to one of his wife's unmarried sisters or to any other woman he chooses and ask her to come and care for the child. If she joins the man, she may remain married to him until such time as they choose to terminate the relationship, for whatever reason. A widower may, after a period of mourning, go and court one of his deceased wife's unmarried sisters, but the ensuing marriage is not called wuch and is considered a new marriage contracted in the ordinary way if there is no infant to care for. It is only when the appeal is made in terms of a child that needs care that the marriage is termed wuch. Thus the wuch is not a true sororate.

The fourth form of marriage is where a woman is either captured from another village or negotiation and gifts have obtained her as the wife of a group of men of the young men's club house. She may not come from the village in which the club house is located; the marriage is thus exogamous from the point of view of the village, differing from the ordinary marriage preference. Her relationship to the young men of the club house is defined as marital although she does not cook their food. Incest rules, and the rules which goven a married woman's conduct

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* This is one of the instances in which there may be a conflict between a lineal relationship (between mother and child) and a conjugal relationship, and in which the lineal relationship is conceived of as the more important and the conjugal relationship expected to give way to the interests of the other.

apply to her, so that any attentions she receives from men of another club house are adulterous and punished as such. She suffers one handicap which other married women do not, however, and that is that she is not free to divorce on her own initiative, but must get the consent and agreement of the group of men to whom she is married. Should she become pregnant or should she wish to leave with the club members' concurrence she may either be taken by one man as his wife or return to her father's house. If she is pregnant, every effort will be made to find a husband for her from among the members of the club; that is, to change her marital relationship from that of a wife to all of them to wife of only one of them. If the women of the village like her, and she is not pregnant and if there is risk that she may leave the village, the women will bring pressure to bear on the men so that a husband within the village will be found for her even if one of the women has to consent to her becoming a co-wife. This woman, married to the men of a young men's club house, is called mispil or mongol.

A large club house with many men, as occurred in the past, might have many mispil, each one married to a portion of the members of the club and not to others. Every member of the club would have a mispil accessable to him, but he would be confined to the one with whom he and his group were married. Such groupings of men for purposes of dividing the mispil between them were based on the territorial groupings within the village.

Despite German and Japanese efforts to effectively prohibit this arrangement, it persisted until just shortly before the outbreak of the war in the Pacific. There are a number of such ex-mispil still alive. With the destruction of the men's club houses by the Japanese, however, the arrangement was impossible; the rebuilding following the American occupation was halted by the typhoons of 1947-1948 and whether the custom will be reestablished with the rebuilding of the men's club houses or not is an open question.

There is general agreement, however, between the German sources and living informants on most of the basic points regarding this form of marriage. The mispil kept things straightened up around the club house, where other women were not permitted to enter, and although they did not cook, they provided the men to whom they were married with diversion and affection particularly. Skilled in singing and dancing, attractive conversationalists, chosen for their beauty, the mispil kept the club housea live and interesting place for the members. Despite the sensational emphasis of the older literature, the primary role of the mispil was not sexual, although sexual relations were a part of their normal activities. An especially respected mispil of the club house of mecuol village in rumung who died

in office has the largest and most ornate grave on the island.

Divorce does not entail any formal action beyond the return of the wife to her father's home, from where she may be courted and remarried by some other man. She must not, under any circumstances, directly go from her husband's home to live in that of another man for this constitutes sufficient evidence that the woman has been stolen and the first husband is entitled to burn down the house of the man who stole his wife and either recover her or steal (by force) some other woman from that man's village. Such action requires force to effect, despite its moral legitimacy, and in the past occasioned bloody inter-village wars. If, however, the divorced wife returns to her father's house and stays there a month or so and then goes to live with another man, it is legitimate even if this man had succeeded in convincing her to divorce her husband and come and live with him. Even where the husband knows that this has been the case, he is morally powerless to act and if he is interested in retaliation must find other grounds on which to take action.

Any children who have been born during the marriage or nine months after the divorce belong to the father. If an infant is still nursing at the time of the divorce, the wife may take it with her until it is old enough to return to its father (from about 3 to 7 years of age). The father is expected to visit the child and help provide food for it. Should he fail to visit the child and bring it food, he indicates that he does not want it and it may remain with the mother. This action is strongly condemned, although it happens occasionally.

Disposal of property is easily and quickly settled on divorce; the wife gets none of what she may have acquired through the marriage. If she owned land before she married, she retains it; if, during the marriage, she inherited a piece of land from her own lineage or relative, she retains that. But movable property of any sort which she may have gained during the marriage stays with the husband. The divorced wife leaves with her skirt, her basket, the few areca nuts and pepper leaves which she happens to have with her at the time, her lime shaker and that is all.

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Despite the fact that the Yap definition of the relationship between a <u>mispil</u> and the members of a Young Men's House was as a form of marriage, it would not be accurate to classify this relationship as "polyandrous" in the sense in which this term is ordinarily used. The fact that the "marriage" between <u>a mispil</u> and the group of men terminated when pregnancy occurred and the fact that kinship relations were confined to the particular men and the woman involved alone, without involving affinal relationships and without the use of kinship terminology, and the fact that the economic arrangements of the marital group were in no way predicated on that relationship (no special rights or obligations by virtue of the marital tie) seems to preclude considering this a case of polyandry. It is none the less significant that in the eyes of the participating the relationship was marital, albeit different from that ordinarily entered into.

Adoption is permitted and takes place as frequently as the small size of present population and the low birth rate permits. The preferred situation is for adoption to take place between close relatives. The adopting mother is thereafter referred to as the sister of the real mother, and the adopting father as the brother of the real father, although the adopting father is is explicitly not the sibling of the real mother nor is the adopting mother the sibling of the real father.

A couple's first child may not be adopted. Adoption must take place before the birth of the child, usually between the third and seventh month of pregnancy. The child is removed from his real parent's home and taken to his adoptors home as soon as it is possible, which is usually between the fourth and eighth week of his life.

An adopted child may not return to its own family for this would anger the patrilineal ghosts (thagith) who would cause its older sibling to die, nor may an adoption be canceled except under such circumstances as are described as "destitution;" that is, if the adopting parents of the child both die and there is no one else in the patrilineage who wants to or is able to take care of it. If the child is old enough to care for itself and his own real parents are without direct heirs or children to help care for them, he may, by performing the duties of a child -- the care and feeding of aged parents --, legally inherit directly from them and to the exclusion of more distant kin, as if he had never been adopted away from his real parents, but still maintaining his rights in the family which adopted him.

It sometimes happens that a man or a couple will "take care of" a child without having arranged for its adoption during the mother's pregnancy. Since formal adoption cannot take place after the child has been born, this device is used to circumvent that restriction, but the child who is thus cared for has no firm legal claim on the parents who "took care of" him, while he retains his rights in his own lineage. The parents who "take care of," but do not adopt a child may make testamentary disposition of their property to that child, except in the case of chiefly land. Since only a childless couple will "take care of" a child, usually this situation causes no difficulty as there are no other heirs to dispute the inheritance.

Adopting parents do not tell the child that it has been adopted, but its age mates or others do tell him, and every adopted child knows who its real mother and father are. Although the child may not refer to the real mother and father by those kinship terms, he usually adheres to the kinship roles which would have obtained had he not been adopted. Two brothers who are separated by adoption maintain the mutual assistance and mutual concern with each other's welfare which two "real" brothers are expected to. The kinship roles which would have obtained between the real parents and their child are, of course, minimized where the child is adopted and leaves the real parents.

## The Major Kinship Units

### The Nuclear Family

### Courtship and the Conjugal Relationship

There is no socially defined period which corresponds to our term "courtship" and includes in its definition that it is the prelude to marriage. Rather, there is an activity which is calculated to win love, and once in love, it is convenient to marry. Since sexual relations are governed only by the incest regulations, caste and class regulations and the individual's personal inclination, premarital intercourse is the rule. And since personal inclinations are regarded as the viable element, love magic does not aim at achieving intercourse so much as inducing the object to "like" or "desire" or "love" the maker of the magic.

Standards of desirability are only well defined verbally at the extremes of undesirability; dark skin color, deformations, skin diseases or advanced yaws, especially gangosa, extreme laziness, undependability, promiscuity, selfishness, stupidity and dullness, and psychoses are all underirable in a lover and such persons are avoided. Although younger people are preferred to older ones as lovers, there is a time, especially for a woman, when she is at the peak of her beauty and desirability and that is from about 18 to 23.

A woman looks for a man who will give her things: fish, betel leaf, areca nuts and limes, fermented coconut toddy, trinkets, and she prefers a man who is even-tempered.

If a young man likes a girl, he pays special attention to her and tries to arrange a private meeting. Should she consent, he brings an ample supply of betel leaf, areca nut and lime and shares these with her while he makes conversation. At later meetings, which may be arranged by sending a child to tell the woman where he is waiting for her, he brings fish, coconut, yam or taro, fermented coconut toddy as well as the makings for the betel chew and shares these with her. There is an elaborate silent etiquette by which it can be known if the girl does or does not like the boy, whether she will or will not consent to further intimacy than conversation, and whether future meetings may be broached or not. The manner of tearing the betel leaf that is handed her is one sign; if she taps the boy's hand with the lime shaker is another.

The first meetings are confined to conversation, and the men complain that entirely too much of it is necessary before the women consent to greater intimacy. Conversation, whether in love-making or in other situations, is well developed as an art, and fine shadings discriminate between conversationalists. Different women require different investments of time and conversation and some require the supoliment of magic, but the men, without exception, made it clear that they were the ones who took the initiative to win the women, and that the women's consent and willingness to proceed with the affair were of crucial importance.

Should a woman be unmoved by conversational and magical advances, the man may enlist the aid of his father or the head of his patrilineage. The father may go to the girl's father , and after suitable gifts and a cautious approach, discuss the problem of his son's suit. Should the girl's father be successfully approached thus, he may tell his daughter to go and live with the young man and unless her objections are remarkably strong, she will obey him, though she may stay married only long enough to demonstrate the incompatibility of the relationship.

A couple who become lovers are expected to conform to the same rules regarding sexual relations as govern a married couple. Although technically free to give her favors where she wishes, since she is technically unmarried, a woman is expected to have only one lover at a time and not to have relations with any one else without formally breaking her affair first. Nor may she have intercourse with a brother of her lover, nor with a man who is younger than her lover.

Couples get married for three reasons, it was stated: they marry for love, or they marry because the girl's father "tells her to", since he wants some political advantage or because the young man and his father have spent most of their efforts in convincing him of the desirability of the match and by giving him presents; and because the man needs a woman to help with the work, where his mother is old and needs help in the garden and is unwilling to continue to cook the young man's food.

In the case of a couple who marry for love, by far the most common situation, the young man convinces the girl to come to his home one night and she does. In the morning, he tells his father or older brother. This person then goes to the girl's father. Bringing shell-valuables with him, the boy's father presents it to the girl's father and informs him that his daughter is at his son's house. If the girl's father is willing he accepts the valuables and they part. If, on the other hand, the girl's father is unwilling for some reason, he declines to accept the valuables and requests the father of the young man to tell the girl to come home. The young man, through his father, may enlist the aid of his village chief in pressing his suit, or the couple may go so far as to run away and threaten suicide, though this threat or the last recourse is seldom actually taken. The final decision, however, is recognized as the girl's father's.

After the couple has lived together at the young man's house for a few weeks, regardless of whether they married for love or for another reason, the first of two ceremonies may take place. This preliminary ceremony is called the tamedinom, where the nuclear families of the bride and groom meet and exchange food and valuables. The gil'lai (groom's sister and her husband) provide a major portion of the materials given to the bride's family and receive a major portion of the materials given by the bride's family. Both fathers announce their wish that the children will be born soon and that the couple will not fight. This simple statement expresses on the one hand the fundamental emphasis of the kinship system and on the other the fundamental weakness of it. The ceremony itself seldom lasts more than an hour and is attended by few people beyond the nuclear families involved.

The second ceremony, the m'moi, may take place anywhere from about four months to a year later; there is no strict rule about the time, only that it not be "too soon." The essential feature of the m'moi is that the bride is ceremonially given the task of cooking her husband's food by the husband's mother. Until this time, the husband's mother continues to cook his food, giving it to the bride to give to the husband.

Both of these ceremonies are treated lightly. In many marriages the m'moi has never been performed although the wife no longer gets food from her husband's mother to give to him; in other cases, the marriage has not lasted long enough for the m'moi to be performed.

The definition of marriage does not depend on the performance of either of these ceremonies; the act of living together constitutes marriage.

The following description of the kinship role of husband and wife is the first of a series of such descriptions, almost all of which are set in the context of the larger description of the nuclear family. There has been no formal attempt made here to single out and systematically list each kinship position or each pair of reciprocal kinship roles. The reason for not following this more usual procedure lies in the way in which the kinship roles are defined by Yap culture.

The only active and operating kinship relationships for the definition of "active" and "operating" which occur are those within the nuclear family with the exception of the mothers brother-sisters son, fathers sisters children-mothers brothers children, and grandparent-grandchild relationships. If father is alive, then ego does not have a father-child relationship with fathers brother; if ego has a father-child relationship with father's brother, then it is precisely the father-child relationship which it described, and it takes place within the framework of the nuclear family. Hence a description of the kinship roles of nuclear family members is a description of the active and operating kinship roles, with the few exceptions noted.

On the other hand, if instead of describing the kinship roles within the nuclear family, a listing of all possible kinship relations were made and the roles appropriate to each were described, the false impression would be conveyed that father and fathers brother and fathers sisters husband all, since they are terminologically "father," play the same role with respect to ego.

Ideally "a husband gives his wife fish, drinking coconuts and the materials for making the betel chew. The wife tends the garden, cooks the vegetable food and gives the cooked food to her husband." Nominally, the husband is the master of the relationship, but in almost every major move, the wife's agreement and cooperation are requested, not demanded. Nowadays the wife may own land which, on marriage, comes under her husband's theoretical control "because he is the man." If the land is the sanction for chieftainship, the husband acts as chief, or if the land is the sanction for magical perogatives, the husband acts in that capacity. However, the husband may not dispose of land which his wife owns without her consent, nor may she do so without his consent. Should divorce terminate the relationship, she retains ownership and the husband loses whatever perogatives that land sanctioned. If the wife dies while married, and if she has not willed her land elsewhere, it falls to the custody of the husband who may will it as if it were patrilineage property.*

At the time of marriage, a man assumes special responsibilities toward his wife's father and mother and his wife assumes special responsibilities toward her husband's father and mother. The husband must bring fish and drinking coconuts to his wife's father and make special efforts to fulfill his expressed wants, while the wife helps the husband's mother in the garden, helps her gather and process food and helps keep the husband's mother's house and yard clean and tidy. Actually, the demands of the wife's father on the husband are felt more strongly and constantly than the demands of the father on his married son, though these demands are rarely burdensome. Conversely, the demands of the husband's mother on the wife are stronger and more constant than of a mother on her own married daughter. There is often a feeling of resentment and burden on the part of a husband toward his wife's father, that is not apparently in accord with the actual effort involved.

The sanctioned phrasing of the marriage relationship as one of reciprocal giving of food omits explicit definition of any affectional component it might seem, but implicitly this is not the case since the act of giving food is defined as an act of love and affection. What is important to note here is that the explicit phrasing is separable from the implicit meaning, although it need not be so separated, so that the mere giving of food may suffice to maintain the fiction that love and affection obtain.

By far the majority of the young people marry for love. It appears, however, that although love is sought in the marriage relationship, it is usually not found. This does not mean that all marriages are unstable, nor does it mean that all marriages are unhappy. Most marriages seem to "settle down" and the couple lives in peace, if not in love, and this is especially so when children are born to the couple.

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* Women's ownership of land, especially chieftainship or sacred land, is a recent development and a consequence of depopulation.

Each person on rumung who had ever been divorced was interviewed, and in the main they gave the following "reasons" for their individual divorces: (1) both partners had ceased to love each other, (2) one partner had ceased to love the other and the unloved partner divorced, (3) one partner had committed adultery.

An investigation of certain adultery cases, in addition to direct statements by informants, indicates that one of the crucial ingredients of the Yap definition of "love" is the exclusive claim on the affection of the loved one.

Certain kinds of deviations are revealing of the marriage relationship, and especially of the element of love. The first of these is the rapid-marriage-divorce-and-remarriage pattern which characterizes a small and on the whole childless portion of the population. The following description by an informant of the symptoms of an insane woman is almost a parody of this pattern:

"She goes and stays at some house where she likes a man and acts as if she were married to him. Then one day she gets angry and doesn't say a thing, and gets her basket and goes and finds another house where she likes the man and stays there awhile with him. Then she gets angry and leaves and goes to another house. She doesn't <u>say</u> she's married, but she acts like it. (Q: What does the man's wife do?) Nothing; they let her stay but she never stays long. She doesn't like many people to be around. If many people come and stay at the house and sit and talk she gets angry but doesn't say anything. She is really very bashful and doesn't like to talk to people."

Some insight is gained into the rapid-marriage-divorce-and-remarriage pattern by the informant (sane) who stated that:

"It used to be that I couldn't sleep if I was alone. I had to find a woman in order to go to sleep. I have had wives since I was very young, but once I got married I never wanted them. After one or two months I want someone else. But I don't like to divorce her, I want her to stay but I like to go and talk to other women."

Another deviation which occurs is the love-affairs and love-troubles of the middle-aged. In the following summary of one woman's adventures the rapid change of partner pattern is also evident:

A woman of 44 induced a man of around 55 to live in matrilocal residence with her, leaving his former wife in command of his house in his own village. This woman stayed with him for almost a year, then ran away to live with a man of almost 65, thus creating a scandal by putting the first man in the untenable position of living on her father's land without a wife, so that if he returned to his own wife in his own village he would have publicly disgraced himself. She stayed with the 65 year old man for eight months and denied all the while that she was

either married to him or living with him or that she had run away from the first man, although this was obvious to everyone in the small village. Then one day she was observed settled comfortably in the house of a third man, aged 55, where she remained for three months prior to my departure from Yap.

Ideally, extra-marital relations are permitted with the consent of the spouse. Failure of a husband or wife to get the other's consent to an extra-marital affair constitutes legitimate grounds for divorce. In practice, this permission is seldom requested since it is expected that it will seldom be granted; the exclusive claim on the affection of the love-object is central to the definition of love. A husband who has a close friend, however, may give the friend permission to stay at his home and have intercourse with his wife when some matter takes him away, and he does this as an act of friendship, a kind of giving and sharing which is part of the definition of friendship. The wife is expected to comply, in such cases, and usually does. There is an ethical line drawn between the exclusive possession of the love-object and the sharing of a wife with a friend that is referable to the more important, more explicit and institutionalized value that selfishness and greed (tebil and chugow) are the worst traits that a person can show. That the ideal of being unselfish and the strong motivation for exclusive possession are often in conflict will be noted frequently here.

Adultery, like marriage and the affairs which prelude it, is limited theoretically by the incest, class and caste regulations and the personal inclinations of the parties concerned. But one more provision is made which states explicitly that a woman should not have adultery with a man who is younger than her husband, nor should a man have adultery with a woman whose husband is older than he is, nor should extra-marital but permission-granted relationships take place between such persons. This limitation on adultery was stated as being "the same as" the rule that younger brother must not refer to his older brother's wife as "spouse." Adultery is least wrong, morally, when the lover and the husband are age-equals. The wife's age is immaterial.

Although extra-marital relations are permitted with the explicit permission of the spouse, adultery, where no permission has been granted, and it seldom is, is disvalued and condemned and constitutes legitimate grounds for divorce and equally legitimate grounds for a beating when the wife is the adulterer. Adultery is spoken of and may be dealt with as a "theft;" it is classified along with the theft of personal goods, coconuts and so forth.

In line with the conception of adultery as a theft is the special moral indignation which is aroused if a woman has adultery in the home of her husband, or near it, or if a man has adultery in his own home in his wife's absence.

Nevertheless, adultery is the rule rather than the exception and long-standing relationships of this sort are not infrequent. It was my impression that in many cases, especially where children graced a marriage, that one spouse would know about and tacitly tolerate the other spouse's affair, although this toleration was undependable at best and dangerous at worst. Informants explicitly states that either a man or a woman might know of an adulterous relationship carried on by the spouse, but not act on that knowledge until it was strategically most profitable -- perhaps months or even a year or two later.

Jealousy, which is a function in large part of the definition of love as the exclusive possession of the love-object, is a constant and difficult problem.

> One young man refused to permit his wife to go into the village without him or to leave the house without him or even to be alone among other women where some woman might carry a message of rendezvous to her. Although he was generally condemned as going too far, his wife accepted this restriction on her activities with seeming good grace, at the same time maintaining a close and constantly pleasant relationships with her own lineage, her husband's foster father, and her husband's younger brother (aged 17). It is interesting to note that when a survey was taken on sexual behavior, this woman's husband reported to me in confidence that he had had adulterous relationships on and off throughout his marriage.
>
> Another young man, married to his third wife for only two weeks, assembled two of her former husbands one night when he was drunk, and with the assistance of his two brothers attempted to beat them for what he imagined was a persistent affection on the part of his new wife for her former husbands.

Finally, it is to be noted that the Yap definition of adultery is not confined, as ours is, to sexual intercourse on the part of a married person outside the marriage. The Yap definition includes conversation, secret or private meetings in which conversation or gift giving takes place, and in one particular case the meeting of a married woman with another man on a public road in Yaptown was sufficient grounds for the woman's husband to beat her and become righteously indignant when jailed for the beating he gave her.

The illustration noted above in which the husband attempted to beat his wife's ex-husbands for her affection for them is at the same time an illustration of one of the two standard ways in which a husband behaves in the face of his wife's adultery, and clarifies the expectation which is held both with regard to locating responsibility for adultery and with regard to how women are normally expected to behave. The story is told in the village of Fai, Rumung, of the last war between the villages of Fal and Ri:, which took place in Spanish times (prior to 1900). A man in the village of Fai was accused, by the men of the village of Ri, of magically inducing the women

of the village of Ri to leave their husbands, to commit adultery, and to fall in love with this Fal man. Some women had divorced their husbands over love for this man; others had had their minds turned but had not divorced; others had had adulterous conversations and relations with this man. The men from the village of ri were resentful and wanted this man killed. The chief of the village of Fal, to whom the ri men came, agreed that this was bad and agreed to have the man killed, but as is customary, stipulated that since no villager of fai would kill a fellow villager, the people of Ri would have to do the killing. The men from ri agreed to this, and the further stipulation was made that the man should be killed outside the center of the village of Ri but still within the Ri village boundaries. The men of Ri, however, botched the killing and their mismanagement precipitated the war in which five men of Ri were killed.

The fact that the Fal man was affecting the women of Ri magically is actually beside the point; as in the case of the husband who tried to beat his wife's ex-husbands, the agression is directed in large part to the man, not the woman in the case and the expectation seems to be that any woman who is approached is willing. This expectation apparently squares with the observable behavior, but what is more important, it is the expectation in terms of which the men act.*

The second way of dealing with adultery for the husband is to beat his wife. Although the more infrequent of the alternatives, it is still one which occurs frequently enough to make marital discord a problem.

Marital discord is a private problem between the husband and wife and if it assumes any proportions, their respective nuclear families and lineages only. It is never a community problem until explicitly made one either by the couple or by the couple's parents or the heads of their respective lineages. In order to make it a community problem, formal invitation must be made to the village chief. The uninvited interference of a village chief in a marital dispute is illegitimate. Marriage is a private affair first, a lineage affair second, and only remotely and by invitation a community problem.

A husband may beat an erring spouse if she has clearly transgressed some injunction or failed to meet some obligation, and such a beating, if performed in some moderation and in private is of no public matter. The ettiquette in this is that the

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* There is no concept of "rape" in Yap. The idea that a woman would have to be overpowered to submit to sexual relations was amusing to informants; it amused them that the men would resort to such a stupid tactic when it could be done more effeciently in other ways. Properly conducted preliminaries, the suppliment of magic, and a little patience were infallible ways of obtaining the woman's consent to intercourse. They might not win her love, but neither would rape. Such a conception is clearly based on the expectation that women by nature are inclined to be willing, not unwilling.

husband should use some light and flexible material like an areca-palm sheath and strike his wife only about the shoulders. The practice, etiquette notwithstanding, is that the hand, open or as a fist, the feet or anything available is used. Even in such a case, however, if the wife is clearly in the wrong, no action is taken by either the wives or husbands nuclear family as it is considered to be no one else's business. An unjustly beaten wife may tolerate this or she may divorce her husband. Only one case was reported where a wife made it a practice to beat her husband, and this was such an enormous joke to my informants that considerations of ethics or justice were impossible to obtain over the volume of laughter.*

## Parent-Child Relationships

The sanctioned phrasing of the parent-child relationship is that "when the child is young, his parents feed and care for him; but when he gets older and his parents are old, then he should feed and care for the aged parents." This ideal is supported by the sanction that an aged parent who dies happy becomes a happy patrilineage ghost (thagith)** who helps and protects the child and his lineage, and acts as intermediary for it in its relations with other supernatural beings. A parent who dies happy has been given the food it wants and the other cares which the parent gave the child when it was young. A parent who has been neglected dies unhappy and although he may cause no specific trouble for his neglectful child, he cannot be counted on to mediate helpfully between the child and the rest of the supernatural.

The parent-child relationship is one of respect which begins at the time of weaning and gradually increases until around the 18th to 20th year of the child's life when it reaches its peak and remains there. The relationship should involve no joking, especially of an obscene nature. "Obscene" includes references

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* In the survey of reasons for divorce cited above, a small but significant number of women divorced their husbands for what they claimed to have been excessive and unjust beatings. Were children absent from the marriage, no wife had to remain married under such circumstances, and my impression was that few did.

** Ego's dead mother or father may be <u>thagith</u>, and his father's mother and father's father, but not his mother's mother or mother's father. This body of ghosts is not patrilineal," but is of the patrilineage as it has been defined and used here, that is, as the English name for the Yap kinship group called the <u>tabinauw</u>.

to genitalia, coitus and flatus; it does not include excretory functions or generalized "dirt."

The husband is present at and assists in the delivery of his child. Prior to the delivery, he shares a series of pregnancy taboos with his wife and takes the major responsibility for enlisting supernatural aid (through the beneficent intervention of the patrilineage ghosts) in the safe delivery and subsequent health and welfare of both the child and the mother.

Birth should be attended only by members of the patrilineage, except under circumstances of stress where special knowledge is required in an emergency situation. Ordinarily the division of labor at birth is based on the known skills of those present and not on their particular kinship status. One who is skilled and experienced at cutting the navel cord does this, while another may be specially skilled at preparing medicines, massage and so on. The active intervention of patrilineage ghosts is only sought after a series of remarkably pragmatic devices may have proven futile in an emergency.

The pregnant woman should make no sound during her labor, lest someone who is not a member of the patrilineage hear her and work sorcery to kill either the child or both mother and child. After the birth of the child, which takes place in or near the residence, when the mother has rested, they both repair to the menstrual area and remain there  days, after which they go to a specially appointed place in the village called the "place of birth." Here a low-caste woman who is skilled and experienced at this task, called a <u>virif</u>, comes and helps care for mother and baby. Toward the end of the period of  days at the "place of birth" the child is named.

The child's name is chosen by divination (with knotted strips of coconut frond called a <u>bei</u>) from among the patrilineage ghosts. The devining instrument is asked one name after another until it indicated "yes." This indication means that the patrilineage ghosts whose name received a favorable reply is happy and that giving the child that name will be auspicious for all concerned. A child is not named after a living member of the patrilineage, but after a patrilineage ghost. Two members of the same patrilineage may have the same name not because they were named after each other, but because in both cases the devining instrument indicated that this patrilineage ghost was happy and that it would be good to name the child after it.*

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* I was chided gently, after my informants found that this could be done at no risk, for naming my dog "Maria" since it was so unseemly that a dog should have the name of a patrilineage ghost. Yap dogs have the most extraordinary names, from "semen," a corruption of "cement" to "kambess," a corruption of "compass," through a series of Japanese nouns not all of which were comprehensible except to the dog.

Parents share the responsibilities and the tasks of caring for their infants. Fathers as well as mothers feed, bathe, joggle to sleep and watch over the welfare of their infants, although the mother bears the major portion of these tasks.

An infant sleeps at his parent's side until he is old enough to sleep in the same room but at some distance from them, which is usually at about the second or third year. Until this time care is taken to prevent the infant from sleeping on its stomach as this would surely kill it. It may sleep on its side or back, and to insure that it doesn't roll over during the the night of its own accord it may be wrapped in a woven banana-fibre lavalap (beguy) so that it is held tightly in the center and the ends which go over the head and beyond the feet are slipped under rocks. Rocks may be put at the sides of the child to help prevent him from turning. Or the child may be placed in its basket suspended from a rafter and which, because both lips of the basket are tied to the suspension cord, is tight enough to prevent the infant's turning over.

After about the fifth year, the child sleeps in another room from the one his parents use. At about his fifteenth to seventeenth year, the son builds, sometimes with his father's help, but more often with the help of his age mates a small house of his own on land belonging to his lineage, but at some distance from his father's house. The daughter may stay in her parents house until her first menses, but after that her father will, if she is unmarried, build her a house on lineage land a short distance away from his house.

The child's first hair-cut is an occasion for festivities which are ostensibly for the child but in fact provide a convenient pretext for the assembled friends and relations to get as drunk as possible.

Weaning comes at a variable time around the birth of the next child. Although properly husband and wife should avoid sexual relations from the time the pregnancy is suspected until seven years after the birth of the child, the usual spacing of births indicates that this taboo is not observed for the full period. Actually, most children follow each other by two or three years , and the first child more often than not is unweaned at the time of the next child's arrival. Some children, however, are partially weaned at the time of the birth of their next sibling. If the child is unmanageable at this time, (the mother is in no position to cope with a fit of tantrums on the part of one child an hour after the arrival of another) the unweaned child is given to some relative, usually its mother's mother or father's mother, who takes it away and keeps it away until it is manageable. Since even unweaned 6 month old infants are given premasticated taro, yams, bananas and other supplimentary solids while they are nursing, the weaning process is not located in the change of food so much as it is a sudden separation from the mother's breast. The last child of a group of siblings, or an only may, may not be weaned until he is 4 or 5 years old, and many of them take nourishment from the supplimentary solids and affection from a dry breast. But even the last child or the only child is weaned by the end of the fifth year, and although the process is slower, the break appears to be as sharp.

Until a child is "old enough to understand," which usually means just before he begins to talk sense, he is not struck or beaten. Once he is known to understand, however, he may be beaten for continued infractions of his parents' commands or for disregarding their warnings. Younger children from the age of about one and a half until three or four are beaten by being switched with the paper-thin pinnae of the coconut frond and by flicking their ears, and father or mother as the need arises, does this.

An older child may be referred to the father for punishment. The mother may threaten to do this, or she may carry out the threat or she may, being impatient, do it herself. A mother may call on some other woman in the vicinity to inflict the punishment and shout at her child, "Look! M matineg is going to hit you! Stop that!!" Informants agreed that most children from around five years on were afraid of their fathers, not their mothers.

However, it is more rare for a mother to actually enlist the aid of some nearby person than it is for her to threaten the child with the displeasure of some other person or the possible beating that some other person may administer.*

Supernatural sanctions are the third device by which parents threaten their children and punish them, but supernatural beings are rarely the only threats which are used. A child who fingers his penis is told "drop that! It's magically-taboo," or he may be told, "drop that! It will become bad," or he may be told, "stop!" and then flicked on the ear, to which his hand will immediately move.**

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* Before the people among whom I lived realized how much Yap I understood, and sometimes in distant villages where I was not known well, I would walk by a mother and her toddler on the path and as I approached hear the mother call to the child, "Look! There is a foreigner. Watch out! He will beat you!" The infant would almost invariably rush to his mother and bury his face in her breast and cry with fright. Yap infants are universally terrified of strangers, and only bold children of 8, 9 or 10 would venture to return friendly overtures. This is true not only for foreigners, but also of natives who are strange to the infant. I was holding a year and a half old child on my lap, when a young man of the next village, the child's mother's brother, came up to where e sat. The child looked, turned, buried his face in my shirt and cried. His mother's brother had been away on an American ship for about six months, and to this child was only a frightening stranger. At this time the child and I had been on intimate terms for about three months.

**. Little boys, who still do not wear a loin cloth, are sometimes seen standing on a path and urinating with their hands clasped behind them! More usually the hands are held to the sides. In nine months of careful observation I only saw one of about 4 touch his penis, and then only for an instant.

A child in his teens, and older, is seldom struck. As the child gets older and becomes a young adult the ability of the parents to punish him physically grows less. A young adult who fails to be respectful to his parents or fails to provide them things they want, becomes known as a "bad child," but usually no direct sanction is employed. If, however, conflict becomes acute the child may be "thrown away" by a parent; disowned and disinherited. This sanction is seldom applied. On the other hand, a child may "throw away" his parents, particularly the father, and refuse to speak with him or have anything further to do with him. If the father dies, the child may or may not inherit, depending on the lineage conference which follows and the decision which is made there.

The growing son has a learning relationship with his father that his mother does not share. Although most everyday tasks such as fishing, swimming, canoe sailing and so forth are learned by the child from older children in his play group as well as his father, the esoteric aspects of the culture are taught by the father alone. He tells his child especially effective magic for catching fish, of the history of his lineage and its rights and obligations, what lands belong to whom, of the meaning of the sacred places in the village and similar matters.

The mother on the other hand continues to gather and prepare the child's food and give it to him. She cooks it in her own pot and gives the child a share of her food.*

A special responsibility which the mother has toward her child is to inform him of the sib affiliation, of the identity of other sib members, of the fact that he must not have intercourse with them, and of the origin and meaning of his sib. The father cannot do this since he does not belong to the same sib as the child, whereas the mother does.

The mother is especially close to her daughter, taking her along to the garden to work, and sharing with her the specifically feminine tasks of housekeeping. But the common belief is that both the son and daughter are more closely attached to the father since, it is said, they will always be "of the land" where they were born (part of the patrilineage that is) while the mother is from elsewhere and may return there. The closeness referred to here is to kinship affiliation, not affection. When questioned about affectional closeness, informants steadfastly maintained that children felt equally close to both parents, and parents equally close to children of both sexes. Observation did not support this generalization, but variability among those observed precluded any simple formula.

Child or adult, willing or unwilling, the individual is still held responsible for breaches of what may for our purposes be regarded as Yap law. If a child steals or destroys property

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* The complex age-graded and religious food taboos which obtain will be described briefly in a later section of this chapter.

to which he is not entitled, his father is responsible to the owner of the property, and if a son gets into a fight, the father must be prepared to act, depending on the circumstances of the affair.

In keeping with a code of ethics which is phrased in absolute terms, the behavior of a father when his son has gotten into trouble, perhaps in a fight, depends entirely on whether the son was "right" or "wrong." If the son was right, the father gives the son full support, advice, and may enlist others to assist him. If the son was wrong in the father's judgment, then regardless of how badly the son may feel, how hurt or insulted or shamed, the father will give his son no support or assistance except to go to the father of the offended party, the one who was in the right and weinig or beg. This last action is encumbant on the father and it is imperative for the father's sake as well as the son's sake that the "begging" be done promptly and properly. If the offended party, and the party who was in the right is not begged then he has the right to assemble friends or relatives and retaliate in force.

Although different infractions necessitate different degrees of begging, and although a fight which occurs between two members of the same village is treated differently from one which occurs between members of adjacent villages, and although a fight which occurs between members of different districts is different still, the essential pattern with respect to the father's relationship to his son is as it is outlined above. When the son is in the right, he gets the full and unqualified support of his father; when the son is in the wrong the father must "beg" and avoid further trouble, but the son is wrong the father will take pains to make it clear to the son that being wrong is not desirable.*

"Begging" (weinig)consists simply in the father's taking a shell valuable whose worth is commensurate with the crime, and bringing it to the injured party and his father and presenting it with a stereotyped little speech which begins, "Beg you, . . .," and then states the events as the father knows them, with explicit mention that the son of he who begs was in the wrong, and explicit request that the matter be dropped. The person who is begged may either accept or reject the proffered valuable; he should accept it if it is appropriately large and brought in time, and although he will be criticized for refusing it, he may. If the person who is begged, refuses to accept the valuable, he is entitled to retaliate in kind, if he is strong enough and if he can muster sufficient force to overwhelm the defenders. A person who has been legitimately begged and who refuses it will have a very hard time getting help if he prefers to retaliate in kind; his brothers and his friends will consider him "wrong" to have refused the "beg" and feel justified in refusing help.

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* If an insane person commits a crime, or if a man commits a crime while temporarily insane or drunk, these constitute "mitigating circumstances" but they do not relieve the father of the responsibility of "begging" the injured party's father.

The pattern is essentially the same in the case of a woman who has a fight or gets into trouble, except that all parties (not including the contestants) tend to minimize the difficulty and treat it as unimportant.*

## The Sibling Relationships

Siblings of the same sex are expected to help each other and to stick together in times of need, though the general ethic that a person who is in the wrong is definitely in the wrong, regardless of his kinship relation to the speaker obtains here, too. Brothers will come to each other's assistance only when they are convinced that the brother-in-need is in the "right."

Older siblings, regardless of sex, are expected to care for their younger siblings though they are not expected to perform major work as part of that care. A three year old child will be watched over by its seven or eight year old sibling and kept out of trouble, fed when it is hungry, pushed about and played with. The older sibling, "because he is older," is expected to give the younger sibling whatever guidance and help and permission are necessary. An older sibling may strike a younger one for misbehaving and a father may ask for an accounting from the older sibling for whatever trouble the younger sibling has gotten into. The father never shunts the whole responsibility onto the older sibling, nor does he hold the older sibling entirely accountable, but he is expected to explain "how it happened." Siblings of opposite sex are only delegated to this nursemaid role when they are quite young or when the age difference between the siblings is considerable; girls of 10 and 12 do not care for youngers of 8 and 11, but older brothers of 10 and 10 do care for younger brothers of 9 and 11, as do sisters.

Older siblings are not given charge of their younger siblings until the younger are walking, primarily because the mother prefers to keep the child herself and does so until it is displaced by a new baby. When this new baby is born, the mother or other relatives will address the older, saying, "See, here is <u>our</u> new baby," or a stranger will say, "See, there is <u>your</u> (plural form) new baby."

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* The difficulties of deciding who was in the right are, of course not to be underestimated. In the cases which were thoroughly explored in the field it was surprising how little difference of opinion there was in the matter of who was right and who was wrong. One reason for this, but by no means the only reason, is that the question does not revolve around "who <u>started</u> it," but hinges on what the fight was about and who took what action with reference to the issue. In one instance a long smoldering antipathy broke through at a drinking party and one young man hit another over the head with a Japanese one gallon sake bottle. It was this action in itself that was wrong, and for which father "begged" the injured party -- when he recovered consciousness -- without any attempt to explore the aggravating circumstances.

The younger sibling is explicitly trained both by his parents and his older, nursemaid sibling, to regard the older sibling "like a parent" (like a father, or like a mother, depending on the sex of the sibling referred to); he is told to mind the older sibling as if the older sibling were the parent, and the older sibling is enjoined to treat the younger "as if he were your child."

Brother and sister, especially when the sister is past her first menses, have an avoidance relationship which involves so few overt symbolic devices that it is hardly noticeable to the unsophistocated observer. A brother and sister may not share food if the sister is past her first menses, nor may they take areca nut from the same cluster or pepper leaf from the same vine. In order to avoid breaking this prohibition, a man will not share areca nut or pepper leaf with his sister's husband, since the sister's husband will most likely have shared his with his wife. Obscene remarks are not made in each other's presence or hearing, nor will a third person be so rude as to make them in the presence of both a brother and sister. Although it was said that a brother and sister may not converse directly together, in practice they do, but they confine themselves to brief, business-like exchanges which are slightly stiff, formal and conducted at a distance. A man must not stay close to his sister, and he must not look directly at her and he should stand so that the wind does not blow from her onto him lest the odor of her skirt arouse him sexually.

Fundamental to these specific restrictions is the general tenent that a sister should defer to her brother and pay him heed, that the brother is the superordinate in the relationship and that the sister is under the care and guidance of the brother. A man may beat his sister if she deserves it and he is expected to providing he has ascertained in advance that she was really "wrong." A man may not beat his sister "because he is her brother;" a man may beat his sister "because she was wrong," and it is usual that a brother make careful inquiry establishing her "wrong" before and not after the beating.

The strength of this avoidance relationship diminishes markedly once the woman is past menarche and when her brother is of advanced years too, and obtains only primarily during the years when both are sexually mature. It is not surprising that there is more than one folk tale and myth describing incestuous relations between brother and sister. Informants stated, however, that brother-sister incest occurred most rarely if it ever occurred, of all the possible incest combinations.

Sexual relations between members of the nuclear family, between members of the lineage or between members of one sib are considered incestuous. Incest is forbidden. There is no punishment for incest which is meted out by fellow-human beings, but the patrilineage ghosts are offended by such action and either on their own initiative or in collaboration with some other spirits they send a fatal illness to the couple. This is not done hastily, and the illness may not appear for some years, but eventually both parties will die as a consequence of their

action. In any event, a woman who has had incestuous union will not bear a child; the patrilineage ghosts, being responsible for conception and being offended, will not bestow this pleasure on the offending woman. The active intervention of any humans in an incestuous situation is strictly illegitimate, although gossip and public scorn are expected.*

## Relationships Between Nuclear Family Members and Relatives Who Are Non-members

The mother's brother is described as being "like a brother" to the sister's child. Although otherwise unformalized, the mother's brother keeps a watchful eye on his sister's child and has a special affection for it. He may instruct a sister's son who is younger than he is, tip him off on better ways of catching fish or even working love-magic. Obscene remarks and jesting are permitted between them, but are not formalized or especially expected. Mother's brother and sister's daughter patterns follow those of brother-sister, since mother's brother is "like a brother," but are less intense than the avoidance between a real brother and sister.

Particular indulgence and affection obtain between the grandparents and the grandchild, and here too obscenity is permitted but unformalized. For the grandchild, the grandparents (usually paternal) always offer the preferred sanctuary from the conflicts which may arise with the parents. If a child runs to his grandparents to escape his parents' wrath, the latter are usually impotent to follow him and the grandparents all too frequently inquire nastily of the parents why the child has been so unjustly mistreated that it had to come to them for protection. In the case of divorce or on the death of the mother of a young child, the father will frequently give the child to his parents, the child's grandparents, to raise and care for and when the grandparents raise a child they are notably lax and indulgent with him, relying heavily on the father to enforce discipline.

The relationship between a man and his father's sister's children collectively termed <u>gidi' ni mfen</u> and individually "mother" and "father" and "father" depending on sex, is one of strong respect.

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* I was fortunate in being able to discuss the problem of incest with a man who admitted to incestuous relations, over a period of about two months, with his daughter. His "ego involvement" in the subject made him an unusually voluble informant and his information proved, on checking, remarkably full and accurate.

The gidi ni mfen are the children of the father's sister. Although terminologically "mother" and father" depending on sex, the gidi ni mfen have special prerogatives in relation to ego. Should ego fail to treat them with proper respect when they come on a visit, or should ego do something wrong in his village, the gidi ni mfen are entitled to tell ego to leave the land to which he holds nominal title.* This power of the gidi ni mfen has not been exercised in the memory of my oldest informants, but they insisted that it was exercised, although rarely, in the long past and could be exercised today. The gidi ni mfen also have a prominent role at the funeral of their mother's brother (ego's father), as well as on the first anniversary of his death, and food from specific plots of land which the deceased heir could not use during the preceding year is given to the gidi ni mfen at that time.

That the term gidi ni mfen and the role of the kin so described is an aspect of the sib system and matrilineal descent is clear, both from informants' statements and from an analysis of ego's position in relation to both his father's and his mother's sibs. For ego, his gidi ni mfen are his father's sister's children who are of the same sib as his father; ego, in his turn, is gidi ni mfen to the children of his mother's brother. Ego, his mother and her brother are of the same sib, whereas mother's brother's children, by matrilineal descent, are not. Nevertheless, it is not ego, but mother's brother's children who actually inherit from mother's brother, just as it is ego who inherits from his father. The sib's claim or prerogative in heritance seems clear.

The relationship between a man and his older brother's wife is one in which the younger brother treats the older brother's wife "like a mother;" this relationship was described in the foregoing.

This exhausts the list of active and operating kinship relations which ego may be involved in at any one time. There remains, finally, only the relationship between ego and those inactive kinship statuses which are part of the kinship structure and function, as we have seen, as first and second reservoirs in filling the active kinship relationships.

All those who are related to ego but who are not in active kinship relations are described variously as "bu'um e gidi" or "nga tabinauw" or "pi be rog" or "gidi rog." The two latter terms are probably the most frequently used, while the former are used in a loosely defined sense in this connection. The first two terms refer strictly to the patrilineage and loosely to all relatives. The two latter terms are grammatically different ways of saying what is in English simply "my people."

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* The word mfen is also used to describe the chasing away of a clinging, pestering child or a girl who sends away a young man paying her unwanted attentions. Perhaps the best translation of the term gidi ni mfen is "people who chase away."

"My people" are described as being "becucugur" or close, and those who are not "close" are non-kin. "My people" can be appealed to in emergencies for help, for raising funds, for loans with which financial exchanges are maintained. The patrilineage, then the local members of the sib, then "my people," in that order, are appealed to for financial aid. Except for financial assistance, however, non-sib members who are "my people" are no better in times of distress than are fellow villagers who are otherwise unrelated. A person who says, "Ah, I am destitute" and makes some request is liable to be just as successful with fellow villagers who are not kin as he is with his "people"; those who "have" must share with those who "have not," and kinship bonds, at this distance, are no greater incentive than the ethic to make one share with a destitute person.

## The Nuclear Family as a Unit: Summary

As a unit, the nuclear family can be seen as a ranked structure with the husband-father in the superordinate position, the wife-mother next, the sons in age-ranked order and then the daughters in age-ranked order. The only equalitarian roles, or the only persons who are rank-equals are the theoretically possible but highly unlikely age-equals born of different mothers, whose fathers were brothers and who, because one father is dead, now are active siblings.

Roles within the nuclear family are defined primarily in terms of reciprocal exchanges between super-ordinates and subordinates and respect between superordinates and subordinates. The parents give the child care, the child returns it; the husband gives the wife fish, drinking coconut and betel chew ; the wife gives the husband cooked vegetable food. Whether the brother-sister relationship is seen as an "avoidance" relationship or an "intense respect" relationship seems irrelevant since avoidance in the Yap brother-sister relationship is based largely on intense respect although it has other elements.

Of particular importance, and especially by contrast with the patrilineage, whose description follows, is that the definition of authority within the nuclear family has very wide limits, and is set in the context of the ranked relationships: the father-husband has disciplinary, directing and punishing authority with respect to his wife and children, while the wife has this same authority with respect to the children while the older child has the same authorities, although more narrowly bounded since they are subject to review by the father, with respect to the younger child. This authority includes the use of relatively unlimited physical force and it is noteworthy that the only legitimate review and restraint of the use of physical force is in the hands of the person within the nuclear family who is superordinate to the user of that force. (If the father is the user of force, his father or mother, the child's grandparents, are the reviewing and restraining authorities. This is because the father is a member of two nuclear families; his own, his family of procreation, and his parents', his family of orientation. These two cannot be separated from the point of view of the father who is using force, although they are clearly distinguishable analytically.)

Notably absent from the descriptions of the kinship roles which have been given is any indication that the nuclear family has solidarity or unity as a collective unit, in the American sense of the word "family." This omission is not fortuitous; esprit de corps, family solidarity, family unity or "group spirit" is simply lacking in the formal definitions of the roles of family members.

However, the nuclear family is treated as a unit in its relations with the patrilineage of the husband and the patrilineage of the wife. As was indicated in the ection on divorce, the patrilineages of both parents exert pressure on the husband and wife to keep the nuclear family together for the sake of the child. The second relationship in which the nuclear family is treated as a unit is on the occasion of the marriage ceremony. This only takes place irregularly and as often does not take place. The nuclear families of bride and groom come together to wish that the marriage persevere without fighting and that is have issue soon. The third relationship in which the clear family is treated as a unit is with respect to the patrilineage ghosts. The thagith, the ghosts, are concerned with all members of the nuclear family and with their welfare, and even though one pool of ghosts operates for the whole lineage, it is with respect to the structural units of the patrilineage, the nuclear families, that the ghosts act, as we shall see shortly.

## The Patrilineage - The Tabinauw

The patrilineage or tabinauw is ideally made up of one or more nuclear families which reside within a village and which are related through the patrilineal line, and in addition, the women born to members of that group who, on marriage, have gone to live elsewhere. The tabin uw may be made up of only one man and his wife, or it may include the nuclear families of the grandfather and his brothers, the father and his brothers, the sons and their son's sons, as well as any women born to this group who have married and have gone elsewhere to live. Now that the population has been reduced to a fraction of what it was, tabinauw made up of only one nuclear family are common.

To the Yap, there is a tabinauw but there is no such thing as a "nuclear family" as a formal, institutionalized and named unit separated and distinct from the tabinauw. The distinction between the nuclear family and the patrilineage (tabinauw) has been made here first on grounds of empirical distinguishability and second on grounds of analytic utility. The following description, then, refers to those statuses and roles which can be empirically distinguished from those already described for the nuclear family, but which remain within the Yap definition of the tabinauw. When a native informant describes the statuses and roles of a tabinauw he lumps without distinction those which have reference to what we can see as the nuclear family and those others which have been separated as applying to the tabinauw. Although all these roles have been mixed in the same pot, so to speak they come out as wholes applicable to one or the other unit and no violence or distortion is done them by sorting them in this way.

Where a patrilineage is made up of two or more nuclear families the avenues of relationship between those families are by way of the patrilineally related males: from father to child and child to father, and from father to his brother and father's brother to father. The rules of reference for the use of kinship terminology, described in the foregoing define these paths and signal the relationships which obtain.

This can be seen more clearly by assuming a patrilineage which is made up of the nuclear families of two men who are brothers. One brother, A, has a child and the other brother, B, has a child. Brother, A, does not play the father's role toward the child of brother, B; he does not punish him, nor teach him, nor does he assume the responsibility of providing him with food. But both brothers and their wives and children are considered to be members of one <u>tabinauw</u>. The following figure states this situation graphically.

Fig. 7

The Patrilineage

Solid lines - descent and also active kinship relationships.
Broken lines - nuclear families.
High position of right hand son of the father at top indicates that he is the oldest of the two sons.
The wives of the two sons are included in both nuclear families just as the sons are because on marriage they refer to husband's father as "father" and husband's mother as "mother", and husband's parents in return refer to them as "daughter" and they play child roles with respect to the parents.

The patrilineage is named after the piece of land of highest rank which it owns and the word tabinauw includes the land, the buildings and the people. Children are most inclined to point to a house when asked what their tabinauw is. Adult men, however, give the name of the ranking piece of land, whereas women reply by asking the question "do you mean the tabinauw where I was born or the tabinauw of my husband," indicating thereby their membership in both groups.

Each patrilineage has at its head its oldest man and he is the nominal owner of all land associated with the patrilineage. There is no special term for "head of the patrilineage" except the phrase "oumo'on ko tabinauw," or "man of the tabinauw." The head of the patrilineage is its leader. He gives counsel to its members, acts as intermediary between the patrilineage and the theagith (patrilineage ghosts) who are in turn the intermediaries between the head of the patrilineage and the rest of the supernatural world.

The head of the patrilineage represents the membership and acts on their behalf at whatever meetings take place in the village. At the village "square" each lineage has a stone back rest specifically set aside for it and at this place the head of the patrilineage takes his seat for any ceremony or exchange of valuables in which his village and his patrilineage are involved. The distribution of the catch of a communal fishing expedition, the collection of valuables to be given to another village, the recruiting of crew for an ocean-going canoe on a flying fish and trolling expedition, and so on are all arranged for through the head of the lineage.

Should the head of the patrilineage want to collect valuables in order to give them away on his own behalf at an exchange, he may request a loan from any other member. He does this on the grounds of the kinship relationship which obtains between them, not because of their common patrilineage membership. However, the first boundary line encompassing the people from whom he will borrow is that of the patrilineage, and it is within the patrilineage that he expects to and almost always can, make the collection he desires. An older lineage member may refuse the request of a younger lineage member, but a younger may never refuse the older's request. Should a younger refuse an elder's request the matter ceases to be considered as a problem of lineage relationships but becomes one of ethics. Any young man who so transgressed the ethic would thereby remove himself from the lineage and no longer, in all probability, be on speaking terms with either the head or the older men whom he refused. If he had any title to land in his own right (inherited from a mother or mother's mother perhaps) he could retain that land. If he had not land he might be homeless and landless if the lineage in conference agreed to order him out. On the other hand, they could allow him to remain on lineage land but in all likelihood they would not.

Work cooperation also follows this pattern. Requests for assistance go from one person to another in terms of their kinship relations not their membership in the kinship unit,

although these kinship relations all fall within the lineage. The head of the lineage, in his capacity as head of the lineage, does not and cannot "order" a lineage member to do a piece of work on the grounds that he has the "right" as the head of the lineage; the grounds are that the one is "father" to the "son," or "older brother" to "younger brother."

The role of the head of the lineage, so far as its authority functions go, is strictly limited in formal terms, and in effect rest on the chain of ranked statuses defined in specific kinship status terms. The influence of the head of the lineage is another matter entirely, and is to be distinguished from the authority of that position. The influence of the head of the lineage rests in part on the fact that for any lineage member, the head of the lineage is the superordinate of whoever is superordinate to the member. Thus, if X is the head of the lineage, and Y is his son, and Z is his son's son, the influence of X on Z is based in part on the fact that X has authority over Y who has authority over Z, although X has no legitimate authority over Z in the role of the lineage head. The influence of the head of the lineage rests also on the fact that he is the oldest male in the lineage, and simply in terms of age he is strongly respected. The influence of the head of the lineage then derives from his position as the father and legitimate authority over whoever is the father and legitimate authority over the person influenced and in part on his position as an old person.

Although the formal role of the lineage head is almost without authority, he has certain positive functions which can be summarized simply by saying that he plays a crucial mediating role between any lineage member and the outside human world on the one hand, and the supernatural world on the other. It is through him that formal communication and formal action are conducted.

This may be illustrated by a simple instance. One day a young man from the village of Fal poled his canoe close to the shore of the village of Ga'anu'un and as he did so, sang a love song in a loud voice. Members of the village heard him commit this disrespectful and insulting act (for the implication was that the women of Ga'anu'un were the objects of his amatory prowess). The auditors of this song complained to the chief of Ga'anu'un who complained to the chief of their superior village, Ri:, and the chief of the village of Ri: went to a formal representative with the second ranking chief to the chief of Fal, which was the offending young man's village. Bringing shell money, they politely informed the chief of Fal what had happened and "begged" him to accept their valuable since this young man had been so arrogant. The chief of the village of Fal accepted the shell valuable and assembled the chiefs of the village of Fal and reported to them. They deliberated and agreed that the young man had been offensive. They then called another assembly which included the head of the young man's patrilineage. Again the story was told and deliberation followed. The head of the lineage agreed that the young man had been offensive. He left the meeting and returned with a stack of shells. First he begged the assembled chiefs of the village of Fal, asking that

they drop the matter and excuse the young man. Then he begged the chiefs of Fal to beg the chiefs of Ri: to excuse the young man and presented more shells. Then he begged the chief of Fal to beg the chief of Ri: to beg the chief of Ga'anu'un to excuse the young man and presented shells. The chiefs of Fal agreed that this should be done, and they sent a group bearing shells to the village of Ri: begging them and begging them to beg Ga'amu'un. And so the matter ended. The young man was not involved; he was represented by the head of his lineage who mediated for him and mediated so as to maintain peace. The valuables which the lineage head presented to the chiefs, about three times the value which the chiefs had received from Ga'anu'un and Ri:, did not belong to the young man, but to the lineage head. There was no direct contact between the young man and any party to the matter except the head of his lineage. The young man was about 28, married and with a home and family of his own.

On another occasion a man who had had an ocean going canoe built for him deliberated with all concerned and set a date for its launching. At this time the canoe maker is paid off in full (he must be paid on the installment plan, while he is building, in order to maintain his incentive to continue to work and to work at his best) and paid to make the magic requisite for the safety and well being of the canoe and its occupants on ocean voyages. The launching is a complex performance requiring formal dealings between the canoe owner and the canoe maker, the canoe owner and the assemblage which comes to help the launching, and the canoe owner and the whole, larger assemblage which comes to join in the festivities. In the case observed, the canoe owner was a man of 56 years of age, father of one child, and for all practical purposes regarded as the head of his lineage. But for a matter as important as the canoe launching he asked a man who stood in a father relationship to him to come and act as the head of his patrilineage. This older man, of around 65, came and performed his role so adequately that it was not until the day after the launching that I learned that he was not the canoe owner at all nor even a resident of the village. He presented the canoe maker with the final payment in a grand and eloquent manner; he spoke on behalf of all those who contributed to the payment and begged that the magic be made effectively and properly. He played what was essentially the role of a master of ceremonies. The real owner of the canoe hardly took part. After the formal activities ceased and the fermented coconut toddy appeared, the lineage lineage head got as drunk as the next man, who was quite drunk, and melted into the informal interpersonal relationships which required neither head of a lineage nor father nor anything more than pleasant conversation. Later when I inquired why the real canoe owner, who was the head of his patrilineage, hadn't done this job himself I was told that when the head of the lineage is as young as this man was (56 years) and as inexperienced, it was wiser and better to have "his father" perform the role, and also that it was better to have someone else be the intermediary, and the intermediary should always be "a father."

The patrilineage does not, then, exist as a group defined in terms of a common position or a common definition of "belonging," but rather as a circumscribed network of related statuses. It

is not a homogenious, unified group with a common definition of its status, but rather a network of statuses related in terms of the nuclear family relationships which obtain between members. The group has a boundary, and it is easy to determine who belongs and who does not. But the group lacks the characteristics of an "association" where action is predicated primarily in terms of group membership and not in terms of how one member is related to another.

Ideally, the head of the lineage is succeeded by his next youngest brother or if he has no younger brother, by the oldest male among those who refer to him as "father."

The death of the head of the lineage may leave the surviving younger brothers who are not on good terms or a group of sons who are not on good terms. In such cases, the brothers may split up and form separate lineages, dividing the land among them and each becoming head of his own lineage. In either event, whether the death of the head of the lineage leaves a unified or a broken group of heirs, the structure of the lineage is elastic enough so that in either case functioning patrilineages remain. They remain either as one unified group of nuclear families or as separate nuclear families, each of which has become a new lineage.

Inheritance and succession follow the lines described for the succession of head of the lineage. When population was at its peak and land ownership resided almost exclusively in the hands of male lineage heads the situation was somewhat simpler than it is today. At that time there appeared to have been less tendency for splitting lineages; heirs who were not on good terms stayed together anyway in most cases, and what was more likely was that one man would be ousted from the lineage and left landless if the others got together against him.

Since nominal ownership of the lands and houses of the patrilineage rests in the hands of the lineage head, who ever succeeded the lineage head at the same time inherited the nominal ownership of the lands and houses. Small movable property - adzes, fishing nets, line and hooks and so forth - might be willed or might be divided or might go along with the major property in land and houses to the next in line of succession.

Since such statuses as village chief, chief of a part of a village, magician, messenger for the chief and so forth were prerogatives which attach to a specific piece of land, whoever succeeds the head of the lineage and whoever thereby inherits nominal ownership also takes over the status which the land sanctions. Although land might be sacred and so sanction the status of magician, the role of the magician, the acts and incantations, the tricks of the trade, have to be learned from the practitioner before he dies. When the magician was old enough to begin to anticipate his death, he would commence to teach whoever was to succeed him - his next youngest brother, or his deceased older brother's son, or his own oldest son - so that on his death the successor would be competent to perform the magic. This learning relationship is part of the whole

father-son relationship described above under the heading of the parent-child relationship as part of the nuclear family description.

## The Matrilineal Sib, The Genung

The totemic matrilineal sib* or genung is the non-local descent group. Descent is traced from a mythical ancestress who may have been a person, fish, animal, bird, plant or other natural object and whose living counterpart should not, in most cases, be eaten by members of that sib.

Although the total number of different sibs throughout the island is not known, there are at least nine different sibs at present and the German literature lists the names of fifteen.**

The sib is exogamous since all members of the sib are considered to be brothers or sisters when there is no closer kinship tie which can be invoked. The kinship term for this relationship is never used as a term of address.

The mother should tell her child of its sib affiliation and the names of others in its sib early so that it will not, by mistake, have intercourse with a sib mate.

Sib affiliation is something which verges on being a secret. It is considered highly impolite to ask what sib a person belongs to, or to mention one's own or another's sib affiliation in the presence of other people.***

The sib affiliation of the adopted child presents a special case. The adopted child belongs to the sib of its adopting mother, but it retains association with the totem (not the sib) of its real mother. The children of an adopted woman disregard their mother's original totemic affiliation and become members of the mother's sib, which is the same as that of the adopting mother. The adopting mother, her adopted daughter and the adopted daughter's children all belong to the same sib; the adopted woman has two totemic affiliations, that of her real mother and that of her adopted mother, while her children are affiliated only with the totem of the adopting mother. If the child is adopted from a real mother who is of the same sib as the adopting mother this problem does not present itself.

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*Outline of Cultural Materials, p. 28. "A non-localized group of unilineally related persons of traditional, but not actually traceable common descent."

**Müller, p. 317.

***In the census of rumung an attempt was made to determine membership in different sibs, to count the numbers in each sib, and to inquire briefly into the extent of knowledge of the organization of the sib. The attempt was almost a failure because of the secret nature of sib membership and the impoliteness of queries about it. Only remarkably generous efforts on the part of close informants with authority prevented this inquiry from rebounding against the ethnographer in the form of universal unpopularity. As it was, the high number who claimed not to know their sib affiliation and the large number who politely evaded the questions made the results rather unreliable.

In the event that an unmarried man adopt a child, the child retains its sib affiliation as if it had not been adopted.

The role of coitus in conception was not recognized prior to the Spanish administration, and even today a large proportion of the population, especially the older people, insist that the two are unrelated. Among the younger Japanese influenced people there is both belief and disbelief, and the problem of descent is not the only significant one which influences this belief.

Coitus has nothing to do with conception we were told by older people, and to prove it the following arguments were advanced as conclusive: First, it was well known that many women had sexual relations and yet had never become pregnant. Second, a concrete case was produced where it was well known that the woman had never had intercourse and yet had born a child. I was introduced to the child, but cautioned not to mention the matter of the child's being fatherless as this was very unfortunate, and would be rude to mention. When I inquired as to how sows managed to have litters, I was politely informed that human beings were not sows, a fact that was difficult to dispute.

Humans, not being pigs, have patrilineage ghosts who watch over the welfare of their living relatives. If the patrilineage ghosts are happy, one of them will intercede with the spirit <u>marialeng</u> which presides over the menstrual area and over the female functions which are associated with that area. This spirit will make the menstrual fluids congeal in a particular woman and she will then become pregnant thereby.

This theory is particularly fitted to a system of double descent, since it neglects neither the mother's nor the father's place in the genesis of the child. A woman alone can have a baby; her patrilineage ghosts may act on her behalf, or she may magically persuade her ghosts to act. But this is the unusual and indeed the abnormal situation. Ordinarily it is the patrilineage ghosts of the husband who prevail on the spirit in charge of this matter. Should the husband's patrilineage ghosts fail to cooperate pregnancy cannot ordinarily take place. Patrilineage ghosts are in this sense the functional equivalent of coitus; the belief in the efficacy of the ghosts is equivalent to the belief in the biological efficacy of coitus for validating the husband's share in the genesis of the child.

The chieftainship of certain of the districts, but not all of them, is based on sib owned land which is inherited within the sib, preferably by a younger brother or a sister's son, or any male of the chiefly sib who resides in the village, the seat of the chieftainship, and who is old enough to assume the responsibility. This last qualification may frequently preclude the sister's son from inheriting this post. The chieftainship of the district of gagil, for instance, is based on sib-owned land which must descend to a member of the <u>waloi</u> sib who is from the village of gachepar where the chiefly, sib-owned land is located.

Similarly the chieftainship of the ranking part of the district of tomil is based on land owned by the fanif sib.*

Although visiting distant parts of Yap is not a common practice, when it is necessary for one reason or another, sib mates may be called on to provide hospitality. Prior to German occupation a sib mate could be called upon to provide sanctuary in time of war to a fugitive in a hostile territory.

A person may, when building a house or raising valuables for an exchange, call upon someone from his sib for help after he has exhausted the support of his own patrilineage.

Since the sib is not localized, a given sib may have members in both castes and all classes. Each sib has its mythical place of origin and its sacred place where it can, in the case of certain sibs such as the porpois sib, magically produce its present day kind in abundance for consumption by non-sib members.

The place of the origin of the sib and the sacred place where magic related to the sib can be made are owned by patrilineages and are inherited within the patrilineage, except for those places associated with district chieftainship. The magician is the head of the patrilineage which owns the land. The magician need not be a member of the sib for which he makes magic.**

Each sib has its chief, and each village has an informally operating sub-sib-chief who is subordinate to the high chief of the sib. I was unable to discover the functions, if any, of these subordinate chiefs. The highest ranking chief of the sib is the district chief in those districts where district chieftainship is a sib function. In other districts, the highest ranking oldest man in the highest ranking village of the district is the chief of his sib.

Considerable pains were taken in the field to try to get at the over-all importance of the sib as compared with the patrilineage The conclusion of the efforts was that the most important functions

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* The role of the district chieftainship is a complex one which is not entirely relevant here. There is evidence to show that in the district of Rul matrilineal succession has given way in recent years to patrilineal succession, but there is little, if any, evidence testifying to the permanence of this change. The remembered history of gagil, for instance, lists two district chiefs who did not take office by matrilineal succession, although the present chief did and there now seems good reason to believe that he will be succeeded matrilineally. For a situation which may be similar see the Truk material on inheritance in Murdock, G. P. and Goodenough, W.H. Social Organization of Truk, Southwest Journal of Anthropology, III, pp. 336-7, 1947.

** This unusual situation is congruent, however, with the sharp and explicit differentiation between magical and political power. This situation will be discussed more fully later.

of the sib are first, in regulating marriage, second in determining succession to district chieftainships, and third, in providing the individual with a body of kin who although remote when compared with his patrilineage, are still closer than other non-kin and who are found all over the island and hence can be called on when ego is away from his patrilineage. Fourth, the sib is important as a symbolic statement of the relevance of the mother and her kin to the child and as a limitation on the strength of the patrilineage with respect to its title to the land.

That the sib is important in regulating marriage emerges from the fact that a careful and intensive search for sib-endogamous, incestuous, marriages yielded only one real cause.

That the sib and matrilineal descent limit the strength of the patrilineage with respect to its title to the land has been seen already in the description of the role of the gidi ni mfen the father's sister's children.

It is, however, impossible to make any simple generalization as to the "relative importance of the sib" beyond repeating the points noted above. Sib organization is by no means "dead" nor an empty formality surviving from some historic time. It is quite live and only appears to be less important than it is because it is treated as secret.

## IV. CRITICAL FACTORS IN YAP DEPOPULATION: ORIENTATION

The foregoing sections should serve as a description of the Yap native setting in both space and time, and as a basis for a closer study of specific processes operating in the population decline. The nature of these processes will be treated in the remainder of this report under several headings. In the realms of human biology and medicine are considerations of diet, physical deterioration and disease. Three biological problems are central here. One is whether the diet and its resulting degree of physical deterioration could have seriously impaired the reproductive capacity of the natives. The next problem is whether the same impairment could have come from venereal or other diseases. The third problem is the possible effects of disease and of native patterns of living in greatly increasing the death rate and leading to a consequent depopulation.

Subsequent chapters will deal more strictly with social behavior - particularly sexual relations, contraception, abortion and emigration. Finally, a broad view is taken of the disruption of Yap society and culture under successive foreign administrations.

## A. Diet, Physical Deterioration and Disease in Yap

Alterations in the numbers or composition of a human group can be examined as an aspect of human biology and medicine as well as of social science. In the past, physical anthropologists have worked in this field in a number of ways. Where skeletal remains have been available, it has been possible to determine the approximate age of death of the individuals, the condition and health of their bones and teeth, body build and racial affiliations. Where the dates of the skeletons in an area extend over a long period of time, historical trends of considerable interest can be worked out. The course of racial history in Europe has been traced largely through the use of such materials. Another field, more germane to the situation in Yap, has been the role of diet, longevity and health in the stability, progress or disintegration of human societies.

One of the finest studies in this latter field is that of Professor Hooton (1930). He found that when the Indians of Pecos Pueblo, New Mexico slowly became depopulated after the Spanish conquest, a deterioration of the physical type accompanied their decrease in numbers.

A later student was Angel (1944, 1947), who has produced a most skillful synthesis of environmental and skeletal evidence having to do with the peaks and slumps of cultural creativeness in the history of Greece. Among his findings were that a longer life span, population growth and improved teeth went with the high points of achievement in classical Greece. The life span and population decreased, and physical deterioration set in during the period preceding the downfall of the Byzantine Empire.

We see, then, that physical anthropology has something to contribute to the social sciences in its biological approach to basic problems in human history.

In dealing with the biological and medical factors in the depopulation of Yap, we cannot make collections of old skeletons. Such collecting would be out of the question for a scientist interested in friendly relations with the natives, since the Yap people take no more kindly to grave-robbing than most civilized communities. Other methods of study, however, are quite feasible.

One such approach is to compare physique, diet and population changes in Yap and other parts of the Pacific. The general question of Oceanic diets and physical welfare is discussed in Weston A. Price's book Nutrition and Physical Degeneration (1939). The diets and physiques of many Micronesians were investigated by Alpert (1946). The matter of dental caries in Micronesian children outside of Yap is covered in the researches of Kuwahara (1941), and in 1946, Hartman studied the dental caries in Chamorro and native children attending school in Yap.

An extensive series of Micronesians were measured by Hasebe (1938). His data are invaluable for a comparison of averages in certain head and body measurements among the various islands. From these figures, it can be seen whether the people of Yap show any

divergences from the usual range of Micronesian measurements which might in any way suggest physical deterioration as compared with other islanders in the Trust Territory.

Anthropologists have known for many decades that the teeth of primitive peoples are usually better than those of highly civilized groups. This difference can be attributed largely to a better diet under primitive conditions. One of the most productive students of this phenomenon has been the dentist Dr. Weston A. Price. In essence, he has shown that where isolated or primitive peoples change to a "civilized" diet, severe physical deterioration, especially of the teeth, sets in. These changes were observed by Price in the White race among the Scots of the Hebrides Islands and the Swiss; in Mongoloids among Eskimos and widely scattered groups of American Indians from Canada to Peru, and among the Negroes of Africa. He studied many of the racially composite peoples of the Pacific Islands as well: Australian aborigines, Torres Strait islanders, Fijians, New Caledonians, and Polynesians from several areas. Price's evidence indicates that all the races of man seem capable of growing good teeth, and that diet is a major factor in determining how good their teeth are.

The precise interactions of growth, diet and living habits which lead to malformed jaws and dental diseases are not yet well known, and the best we can do in our ignorance is to describe certain associated phenomena without too much reference to their interconnections.

Where an aboriginal or local dietary has been abandoned in favor of "civilized" foods, a combination of nutritional deficiencies leads to a physical deterioration, of which dental disorders are only a part. This deterioration characteristically involves a narrowing and warping of the nose and palate, crowding and decay of the teeth, abnormal bites of several kinds, premature tooth loss, diseased gums, and abnormal growth of the whole body. These derangements of growth are particularly apt to affect the pelvis in girls and later lead to difficulties in childbirth.

Price thinks, furthermore, that when a group of people is threatened by widespread physical deterioration, depopulation is an imminent consequence. He cites the civilized population of Australia as one society in danger of such a decline.

Price has shown that the primitive dietaries of the Pacific islands which he studied were associated with notably sound teeth. For example, the Melanesian diet of root crops (especially taro), fruits, fish and shellfish had some 5.7 times as much calcium, 6.4 times as much phosphorus, 26.4 times as much magnesium, 22.4 times as much iron, and at least 10 times as much of the fat-soluble vitamins as the store-bought, high-carbohydrate foods consumed by "modernized" natives.

The incidence of carious teeth in Melanesians living on aboriginal diets ranged from 0.14 per cent in New Caledonia to 0.42 per cent in Fiji. With the onset of "modernization," the incidence of caries rose to 26 per cent on New Caledonia and 30.0 per cent on Fiji. Price's figures on the dietary constituents and tooth decay among "primitive" and "modernized" Polynesians are of the same order of magnitude as the foregoing material on Melanesians.

The modernized natives in both Polynesia and Melanesia tended to show other signs of physical deterioration as well: dental crowding, mouth breathing and malformed faces.

A study of diet and physical welfare in the Micronesians was made in 1946 by Alpert. He investigated the diets in all the major Micronesian islands except the Marshalls and Ponape. In some of these places (not including Yap), he examined the natives for the visible signs of physical deterioration which occur in certain nutritional deficiencies. Although Alpert made no biochemical analysis of Micronesian foods, he criticizes them extensively.

Micronesian diets, like those of much of Polynesia and Melanesia, are based on root crops such as taro, yams and sweet potatoes; tree crops such as coconuts, Polynesian chestnuts and breadfruit and protein sources such as fish and shellfish. In many localities the people eat chickens and eggs. Meats such as pork, fresh beef and canned products are seldom major items of food where people live under traditional conditions. The atolls, in most cases, have a more limited dietary than the high islands such as Yap.

Alpert feels that Micronesian diets are deficient in leafy vegetables, milk, eggs, citrus fruits and sometimes fish. Nearly all food elements are somewhat lacking his opinion: proteins, calcium, iron, Vitamin C, the B-complex vitamins and calories.

As a result of these deficiencies, Alpert feels that certain visible signs of malnutrition appear in most Micronesians. He did not examine the Yap people for these manifestations, however. The successive stages of malnutrition, according to Alpert, are tissue depletion, biochemical "lesions," functional changes, and finally, anatomic lesions. Alpert thinks that the first two can be detected by blood tests but not by an ordinary physical examination.

Alpert thinks that Micronesians in general are fairly well-developed, especially the males. Maturation is slow, however, and children are often thin and look younger than their stated ages. Most adult females age quickly; Yaws, infections by fungi and bacteria and intestinal parasites are very prevalent. Tuberculosis is a common cause of death.

Gross diseases of nutrition, on the other hand, were not so apparent. None of the Micronesians whom Alpert examined had edema or obvious signs of ber-beri or pellagra. Signs of old rickets were apparent in a few children.

The islanders did show lesser symptoms which Alpert considers as evidence of poor nutrition. He did not examine the Yap people for these signs, however. The symptoms included vascularized and thickened conjunctivae of the eyes, redness of the tongue with a fissuring of the surface, atrophy and fusion of the filiform papilae, and hypertrophy of the fungiform papilae. A few individuals showed an actual edema of the tongue, perhaps as a result of too little of the B-complex vitamins, especially niacin. A prevalent hypertrophy and recession of the gums may reflect a deficiency of Vitamin C.

The foregoing discussion should make it clear that Price and Alpert disagree as to the adequacy of Oceanic diets. This disagreement would have to be settled by further evidence, only a part of which can be provided by measurements, observations and physical examinations.

The most urgent need in filling the gaps in our ignorance of this subject is a complete and modern analysis of Micronesian foods. Such an investigation would be expensive, but already has some noteworthy precedents. Intensive biochemical assays of Chinese and Mexican diets have recently been done by the Nutritional Biochemistry Laboratories of the Massachusetts Institute of Technology, under the direction of Professor Robert S. Harris. In these cases, perishable foods were flown to the laboratory by air and analyzed under the best possible conditions (Harris, 1945).

This kind of research in Micronesia would provide us for the first time with an adequate account of the dietary resources of the Trust Territory. Biochemical knowledge of foods, however, is not the whole story. It is possible that the health of the natives is such that even on a good diet they may suffer from malnutrition as a result of the inroads of parasites or infections. A really complete nutritional investigation should find out the mineral and vitamin content of native blood and urine, as well as the microscopic condition of tissues of the gums, tongue and conjunctiva of the eyes (Kruse, 1943).

In the absence of such valuable data, we must rely on information on the gross physical state of the islanders. This evidence is actually quite significant and worth discussing.

If we turn from diet to dental decay, it is well to consider two studies of caries in Micronesia: one by the Japanese investigator Kuwahara (1941) and the other by the American Hartmann (1946). Kuwahara tabulated the percentage of decayed teeth in Micronesian school children in the years 1930 to 1937 in Palau, Truk, Ponape and Jaluit. Hartmann investigated the teeth of school children in Yap, including a colorimetric test of the activity of acid-forming bacteria in the saliva. He compared the caries and bacterial activity in the mouths of 43 native and 44 Chamorro children in Yap. A tabulation of the findings of these two studies will be cited here.

Table 1
Incidence of Dental Caries in Micronesian Children

| Affiliation | Per Cent Decayed Teeth |
|---|---|
| Ponape | 57.67 |
| Jaluit | 42.83 |
| Palau | 38.57 |
| Truk | 13.16 |
| Yap Chamorro | 10.28 |
| Yap Carolinian | 5.84 |

It is noteworthy that the Yap native children had less caries than the other groups studied. Hartmann found, too, that they had less acidogenic bacteria in their saliva than the Chamorro children from the same island. The diets of the Chamorros and Yap people differed mainly in that the Chamorros ate more bread and rice. The basic items of subsistence, however, were the same: taro, fish, bananas, coconuts and breadfruit. Apparently the increment of foreign food in the Chamorros' rations made the critical difference in dental caries.

If we compare caries in Micronesian children with those of the other Pacific islanders studied by Price, we see that Ponape, Jaluit and Palau children seem to suffer from the extensive decay found in Price's "modernized" natives. The percentages in Truk and Yap are not as low as in the Melanesians and Polynesians on a completely aboriginal dietary, but these groups of Micronesians are obviously not yet severely ravaged by the culinary blessings of civilization. It will be apparent later that this same resistance to caries also occurs in the adults of both sexes in Yap. It is not unreasonable, however, to suspect that factors other than foreign foods may account for the high incidence of caries in some parts of the Trust Territory outside of Yap.

Physical deterioration affects not only the teeth, but also the shape of the facial skeleton. Price has shown that narrow noses, stunted stature and elongation of the face are characteristic of peoples who have abandoned a good dietary. If such deterioration were associated with the Yap depopulation, we might expect that the Yap people might show more of these features than other Micronesians.

As a basis for such comparisons, we have the remarkable anthropometric survey of Hasebe (1938) among the peoples of the former Japanese Mandate. He measured sizeable groups of natives in nearly all the larger islands of the area, including 46 individuals on Yap. He himself used his data for reconstructions of racial history. For the purpose of this report, however, it is enough to cite the ranges of averages in certain head and body measurements which Hasebe obtained, together with findings on the males of Yap both from his work and from a series measured for this report. Since Hasebe measured no women in Yap, the present series will be used instead.

In interpreting this table, it is important to realize that Hasebe established nasion (the midpoint of the naso-frontal suture) several millimeters higher than other students who have measured Micronesians. As a result, his nose and face heights are not strictly comparable with those of other anthropometrists, although they are comparable with one another. The range of his data for all the islands where he worked are cited, with the exception of Kapingamarangi and Nukuoro, whose inhabitants are racially distinctive and much closer to the Polynesian than to the Micronesian type.

Table 2
Micronesian Ranges and Yap Averages
of Head and Body Measurements

| | Micronesian Range of Means | Yap Means (Hasebe) | Yap Means (Hunt) |
|---|---|---|---|
| | - - - - - - - - Males - - - - - - - - | | |
| Number of individuals | 11 to 185 | 46 | 347 |
| Stature (cm) | 156.8 - 164.4 | 160.5 | 160.3 |
| Head length (mm) | 185.2 - 195.6 | 189.0 | 188.5 |
| Head breadth (mm) | 138.5 - 149.7 | 146.4 | 150.2 |
| Bizygomatic face breadth | 135.9 - 143.9 | 143.9 | 145.0 |
| Nose breadth | 40.2 - 44.0 | 42.1 | 41.7 |
| Nose height | 52.0 - 61.2 | 56.2 | 54.7 |
| Total face height | 121.7 - 132.2 | 123.2 | 117.3 |
| | - - - - - - - - Females - - - - - - - - | | |
| Number of individuals | 6 to 43 | -- | 130 |
| Stature | 141.2 - 155.5 | -- | 150.0 |
| Head length | 174.9 - 188.5 | -- | 178.7 |
| Head breadth | 134.2 - 144.6 | -- | 142.5 |
| Bizygomatic face breadth | 125.6 - 132.4 | -- | 134.4 |
| Nose breadth | 37.1 - 42.0 | -- | 37.3 |
| Nose height | 52.6 - 58.6 | -- | 49.1 |
| Total face height | 114.1 - 123.5 | -- | 106.6 |

The most important finding here is that none of these measurements indicates a greater physical deterioration in the Yap people than in their racial kinsmen on other Micronesian islands. Although an allowance of several millimeters would be necessary in comparing the nose and face heights of Hasebe and the present series, there is no evidence of facial elongation in the Yap people. The zygomatic arches are broad, so that the facial width is greater in both sexes than in other Micronesians. The nose breadths are on the low side of the midrange, but there is no evidence in a visual appraisal of Yap noses of the pinching and malformation which accompanies physical deterioration in Price's photographs of Melanesian and Polynesian natives in this unfortunate condition.

Still another approach to the question of the physical deterioration of the Yap people is essentially historical. In the ideal case, we would have a series of skeletons dating back several generations and extending to the present. If these bones were available, it would be possible to trace constancy or change in the physical type throughout the period of depopulation. It so happens, however, that we can do almost as well as this by other means. The fundamental problem is to find out what the physical condition of the Yap people was before the depopulation.

Before the coming of the Europeans into Micronesia, the western islanders extending from the Marianas to Palau can be considered as belonging to one culture area. The similarities of Yap and the prehistoric Marianas, in particular, are apparent in economy, technology and social organization. The Chamarros of the Marianas, unlike their neighbors, were almost exterminated by the Spaniards in the sixteenth century, and underwent extensive race mixture with such diverse elements as Filipinos, Europeans and Mexicans. Most of the aboriginal culture underwent profound changes. The Yap people, on the other hand, were relatively untouched for over three hundred years longer, and even today are culturally conservative. It is therefore legitimate to regard the original Chamorros as fairly typical western Micronesians in most aspects of living habits, diet and dental conditions, and to use them as a basis of comparison with the surviving natives of Yap.

It is fortunate that a series of Chamorro skulls from Guam exists at the Bishop Museum in Honolulu, dating from just before or just after the Spanish conquest. The diet, dental structure and diseases of the old Chamorros were studied by the dentist Leigh (1929), and his descriptions will be used here.

The aboriginal Chamorro diet seems to have been fairly similar to that of the modern Micronesians further south. Their carbohydrate sources included taro, yams, breadfruit, bananas, and the nuts of Cycas circinalis (a small palm). They were unique among the Micronesians in that they grew a little rice as a luxury item for feasts. They ate coconuts and drank the "milk" of the unripe nut. The Spanish sources are not clear on whether they ate meat, although they kept pigs, chickens and doves in captivity. They caught a great deal of fish and often dried it in the sun for future consumption. They also ate seaweeds. Like many other Oceanic peoples, they cooked their food next to hot stones in an underground oven. They chewed betel nut, but had no alcoholic beverages.

Their diet, as we shall see, is sufficiently like that of Yap so that it seems quite reasonable that their dental condition might be comparable as well. The modern diet of the Yap people is based on subsistence activities which are quite representative of high islands in Micronesia and Polynesia. By far the bulk of the Yap diet comes from the produce of the native gardens, groves and fishing grounds.

The nuclear family in Yap lives on land which is owned by the lineage, but whose title nominally rests with the head of the lineage. Every lineage has lands which are allotted for food production, and these lands are further subdivided into five groups. Each group is dedicated to the production of food for one age grade: old men, old women, adult men, adult women, and young women and children. The food for the nuclear family members is taken from the land appropriate to the age of the consumer. Mothers and children get their food from the same plots when the children are very young. The man's food, if he is young and unmarried: that is, in his teens, comes from his mother's plots. If the young man is older (in his twenties), his food comes from the adult man's plots. The husband may never eat food from his father's plots so long as his father is alive and for one year afterward. It is only when a father has an infant child that he may share scraps of food, but even this is not proper. When the child has been fully weaned (2-5 years of age), it no longer may share any food with its father, but may continue to share food with its mother.

The work of cultivation is done by the age group appropriate to the land: old women cultivate old women's and old men's plots, young women may not even be near plots of old men and old women, and old men take pains to avoid young women's plots. Adult men may cultivate old men's plots, but this is done only in certain cases. It is done when the old man is helpless and cannot tend his own plots, and when the adult man is close enough to the old man's age. It is the son's duty to cultivate his old and helpless father's plot, however, and it is by doing this that he returns the work and gifts which his father gave him when their conditions of helplessness were reversed. This scheme of cultivation applies to all vegetable foods except taro. Women who are still of menstrual age may not go into or walk on paths that are near the taro pits of old men. At the time of the first menses of a girl, someone is always charged with the special responsibility of reviewing such paths with her so that she may be sure to make no mistake and walk on them.

Food is divided into vegetables (<u>gagan</u>), fish (<u>nig</u>), and ripe coconuts (<u>mareuw</u>). Vegetable foods are further subdivided into taro (<u>lak'</u>) and other garden products. Taro and coconuts have high symbolic value, and the taro and coconut patches are most strongly guarded against transgressions by outside age groups. The other vegetables -- yams, sweet potatoes, Polynesian chestnuts, melons, bananas and squashes in the main -- are less rigidly earmarked for an age group and are less secure from the work of other age groups. Fish, on the other hand, only becomes the prerogative of one age group in terms of the whole fish, not in terms of the place of origin. Anyone catching a fish may give it to anyone, but the whole fish may not be divided between age groups. Certain species of fish, however, are tabooed to certain statuses, age groups and certain sex groups, while others are specially reserved to one or another status. One variety of black and white rock and reef fish is dangerous to men and only eaten by women and children. Certain other fish are reserved for old men. Since men are the only ones to go into deep water for fish, it is their responsibility to provide fish for their wives, children, and old parents.

Another example of this restriction of prerogatives is whale meat. The whale is a chief's dish and should not be eaten by an one else. It was said that long ago, there were two low caste villages in Rumung Island, not just one as there is today. Once a whale was caught by the members of one of these villages, but instead of bringing it to the chief of the village to which they were attached, the people ate it secretly. When this transgression was discovered by the chief and the high caste villagers, the entire low caste village was told to leave. They did, and ever since there has been only one low caste village on Rumung.

The role of women in collecting sea food is greatly limited. They will hunt in ankle-deep water for certain kinds of shellfish, but do this only occasionally, and the take is rarely large.

The lighting of cigarettes and the preparation of food for consumption are age graded, just as taboos on certain fish are. The same fire or match used to light a young man's cigarette cannot be used by an old man. Old men's food is prepared by old women in pots and over fires that are used only for old men's food. Different pots and different fires are needed for old women's food, and still other pots and fires for young women's food. Young men may, until they become adult, share their mother's food from her pot and her fire. Young men may share food with their wives if the wives have prepared it.

Food preparation takes place in a special cook house having the generic name "small house" (ta'ang). This term is also used for the mourning hut and the shelter where a girl stays during her first menstruation.

A special skirt is worn by the women attending to food preparation. This skirt is worn in the cook house only. It is put on when work begins and left in the house when it ceases. This skirt may never be worn in the living-house. The skirt appropriate for the living-house may be worn outside around the yard, but it is improper not to cover it with a fuller, bigger skirt when out on the paths and elsewhere within the village.

The rules of separating foods according to age grades might cause the ethnographer some embarrassment except for the fact that the Yap people have had sufficient experience with foreigners to know the simple and expedient ways of avoiding these embarrassments. One of these is to deny that one is hungry, maintaining that one has just eaten a large meal, and pushing out the stomach to prove it. Another, even more efficient system from the native point of view, is to explain to the foreigner the essential point of the system: that a whole unit of food cannot be broken in two for different age groups. Then the native suggests that a whole can of meat or sardines will be an acceptable gift: one can per person. When the ethnographer intended to divide one can among five people, he finds that it is more acceptable to give five cans.

The woman's gardening may be done in company or alone, but this is purely a function of the agreement of the moment. A woman who has some weeding or cultivating to do may ask her friend or friends to come along, and they may work each in her own plot, or all may work the plots in succession. This functions mainly so that a woman would not become bored or lonely from working alone.

Similarly, the men, in fishing will go out alone or with a friend or friends. Although most fishing within the reef is done alone; outside the reef, fishing requires cooperation and relatively large teams. Fishing teams outside the reef will be described more fully in connection with village organization.

Fish are only taken from lineage land-in-the-sea. Fishing in any other lineage's sea constitutes theft, just as removing coconuts from any other lineage's land is a theft.

Essentially, the nuclear family takes care of its own production, preparation and consumption of food, although any husband and father is a member of two nuclear families: his family of procreation and his family of orientation. A husband and father who is also a son catches fish for his family of orientation as well as for his family of procreation. Although the food resources are owned by the lineage, the labor of production, preparation and consumption are problems of the nuclear family.

It may be noted parenthetically that the only heavy work that a nuclear family cannot accomplish alone is house building. The cooperative effort for this work is supplied primarily by lineage members and friends, with the assistance of a magician who may or may not be a member of the house-builder's lineage. Even then, any work which the husband himself can do he does, calling on help only for those special tasks which need the labor of two or more men: house posts, lifting the roof on and so forth.

Thus, the Yap people still have a subsistence economy which is based upon the cultivation of several crops and the harvesting of several wild ones. Absolutely basic in the diet of even the most acculturated native--even those in the jail in Colonia--is taro, of which there are at least seventeen named varieites. When Müller (1917) worked on Yap, it must have been the same, since he mentions that the giant leaves of the plants could be seen over much of the landscape.

Taro, or <u>lak'</u> (<u>Cytospermia camissonia</u>) is raised in a pit which ranges from ten feet square to one which is of such irregular shape that it cannot be readily characterized, but which would encompass an area of at least 200 feet by 200 feet.

These huge pits are owned by several people. The boundaries are delineated through low earthen dams which have been in the same spot as long as people can remember. Planting is continuous, in the usual manner for this vegetable throughout Oceania, by taking the side shoots from the top of a tuber and placing them about irregularly in the mud.

Various varieties, which the natives have noticed and named, take from about seven months to three years to mature to the point where they are considered fit to eat. Any given tuber can be evaluated in degrees of excellence. For excellent growth, a tuber must stay in the ground for a long period of time, with the soil under a layer of from one to five inches of water. No strong winds should shake the leaves nor the tuber.

The last consideration came up during the aftermath of the storms of 1947-1948. At first, the taro was supposed to die and starvation would be imminent. But when this did not materialize and the battered and torn leaves started to repair themselves somewhat, the damage was then claimed to have been done in shaking the tubers, making them "weak."

The result, for a man, of eating these tubers was roughly that of living on rice: that is, his stomach felt weak and he could not work. Actually, a slight difference could be detected in the taro which had been subjected to this shaking. This difference involved a coarsening or drying of the texture so that a fibrous element seemed predominant.

The usual method of cooking and preparing was to peel the tuber, cut it into chunks about two inches square, put it into a kettle or old iron pot, cover with water and steam under a mantle of banana leaves for about an hour. The result was pleasant, though somewhat pasty and neutrally flavored.

The smaller leaved taro, mal (Colocasia esculenta) could be grown in a pit under water, or on dry ground according to Müller (1917). The leaves and tuber were much smaller if it were grown dry. The natives' estimate of the necessary time for the maturing of this plant was nine months if it were under water, and on land about eighteen months. Its preparation was identical to that of the lak', but it was of secondary interest for food if the more succulent lak' were available.

Cultivation of the two plants under water was identical. There were no new pits dug while we were on Yap. In any case, there were many abandoned ones which could have been easily brought into shape had there been a sudden need for more food.

Women are solely responsible for weeding, gathering, replanting and fertilizing. All these procedures are simple, involving usually only a sharpened flattened piece of iron, to be used much as a digging stick in loosening the tubers or rooting up large weeds. The continuous fertilization of the pits is the same as that observed by Müller, and consists of taking a section several yards square, digging out some of the muck, and filling the hole in with grass or semi-decayed vegetable matter. This then rots and will be replanted when it has attained the proper consistency.

The pits nearly always look clean, with few weeds and many healthy, large plants. But if a pit is not attended to several times monthly, it rapidly becomes filled with weeds. The growth in abandoned pits will gradually choke out all but a few straggly plants.

One variety of taro of this general kind is called honolulu (Colocasia esculenta), since it is commonly supposed to have come from Hawaii. It is never grown under water. Just as mal is sometimes grown on dry land, it is simply a matter of placing a cutting from the top of a honolulu tuber into a little spot of loosened earth and then periodically pulling up weeds. In each case, the individual patches of these crops are small and scattered. The basis for this scattering is the pattern of land ownership previously described.

Yams and sweet potatoes are less important staples than taro in the Yap diet. Again, there are names for several kinds which could not be distinguished one from the other by an outsider.

Starting late in January and going on for several months, the hillsides on all of Yap seemed to be on fire. All day long and into the night, fires burned out the grass and small brush so that underneath, in most cases, was evidence of last year's crop. The Japanese tried to get the natives to make rows, heaping up the dirt and planting in the loosened earth. The Yap way was simply to scatter the plants out over a patch, keeping the weeds down and using the same spot for the potatoes that come naturally over the next two to four years. They continue in this way until the yield becomes too small to pay. The Japanese insisted on tearing the field up each year and alternating spots for the rows. It is instructive to see these patches in all stages of becoming leveled out again with bare traces of the rows remaining.

In addition to the small individual patches, there was a large communal farm inland from most villages. Here, in a flat area about the size of five football fields, the various small plots were individually owned, tended and harvested. In between the potato plots would be ridges of earth about five inches high, with paths winding throughout the whole area. There were few pits for taro.

On inquiring about the ownership of the plots, the old women at work in any of these could stop and point out the owner of each. This pattern existed before the Japanese came, and had been retained in spite of them.

Planting starts in January and goes on through April. This period is the dry season. Little growth takes place at this time. Apparently without being able to verbalize it, the natives force the plants to send deep roots for water, thus getting them off to a firm start. This crop can be eaten practically all year, if one is willing to pick about for miserable, small tubers, but the main production came through April, May and on until around October, after which the rains became less and less regular again.

One of the most prized crops for taste and quality is do'og (Dioscorea alata), a species of yam with a fluish flesh. It grows to the extraordinary size of five inches in diameter by two and one half feet in length.

Again, boiling after peeling is the principal means of preparation, and again without salt. Apparently this plant is erratic and uncertain in its growth and development, since there are several magic formulae which are said to assure its successful ripening. The vine is allowed to grow up on a bamboo scaffolding as tall as twenty feet. Invariably a native will make some remark about how beautiful someone's do'og looks.

Other plants which are cultivated include the pineapple, pumpkin, squash, watermelon and banana. The first four of these provide only a small part of any diet and are planted very casually in small patches with little attempt at systematic cultivation. The quantities are so small that they warrant no further discussion.

The banana, however, of which there are several varieties, is one of the great staples. Around each house an appropriate number of plants will be found: some bearing, others just getting started. The procedure which was noted most often was that a woman would find a young plant somewhere on the family land and transplant it close by the house, sheltering it at first with some such thing as an upright coconut leaf until it could get an adequate start.

Nearly always, the whole plant is simply cut off when the fruit is ripe or nearly so. The bunch of bananas is then taken into a house or sheltered in some manner from direct sunlight to keep them from rotting.

In a very few cases, the bananas are cooked. Occasionally they will roast several in the glowing coals. The resultant product is edible but not delicious. At any time of the day or night, people eat the bananas. These fruits are not over a third of the size of our Central American product, and one person will frequently consume eight to fifteen of them at one sitting.

Various natives claimed that the plant bears the year round and that the distress when the first storm ruined 90 per cent of the crop was enough to make one feel that this food must play a major, if inconspicuous part, of the total diet. Only after about the middle of may, 1948 did there again come any sizeable yield. This means that this food can be knocked out for several months by one severe storm.

Orange trees are usually found with one or two close by the house and several scattered over the other pieces of land. There is little care necessary for this crop. The ripe fruit, green in color and about three inches in diameter, is simply picked so that there are always some oranges about the house. Trees by the hundreds were uprooted by the storms, and for awhile there were so many oranges available that the combined population could not begin to eat them.

Probably the only other major food plant is the coconut. Trees are tall and sturdy, and there was no evidence of the destructive activity of a parasite that so often threatens this crop on

Pacific islands. Trees are in and throughout the village, but not generally distributed along the coast or throughout the interior. Several varieties of nuts are named, and several stages in the development of the nut. The ones of most importance for food are the uchub or drinking green coconut, and the mareuw or ripe nut which was edible or used for making copra. Favorite trees were notched along the trunk for easy climbing but when the need arises a boy would not hesitate to double a rope around his ankles so as to leap frog up the swaying trunk.

As a general rule, the drinking nut supplied most of the water consumed by any individual. To get at the water, it was only necessary to chop off the end of the nut and drink the contents as from a cup. To eat a ripe nut it is necessary to chop the whole nut open and scoop out the meat.

Insofar as could be observed, almost no breadfruit was eaten.

The main food outside of vegetables was fish. In former days there were great communal enterprises, ranging all the way from a group of neighbors in several canoes, using a large net, to the flying fish expeditions where for as long as three months, a group of men would be isolated from the other villagers and fish nightly. This latter practice used outrigger canoes of large size which were destroyed and have not been entirely replaced yet. These ocean-going canoes could move at a fast clip so that large tuna or barracuda could be taken through trolling.

Today, almost all the fishing is done in weirs or by individuals spearing in shallow water on the reef, both in the daytime and at night. In one weir, observed for several months, there were never more than a half dozen small fish for any given change tide, and after damage from the storms it was inoperative for several months.

The most familiar sight is where two men will be out walking slowly along, one with a large circular net weighted all around its edges, and the other carrying a string of fish. Fish caught in this way are almost invariably small and many hours of patient work are needed to catch them.

When spearing is feasible, a set of goggles is donned and, walking or swimming, the hunter tries to sneak up on fish resting in the shadow of a coral head. The kill is made with a short underhand jab in which the speak never leaves his hand. The natives' skill is not excessive, and many times they have to stab repeatedly even at a trapped fish before getting him.

Thus, it turns out that very few large fish are caught, making the process of getting enough smaller ones for family needs a time-consuming and tedious, if not strenuous, job.

Almost anything that lives in the sea will be eaten, including sea urchins which are simply broken open and swallowed. Almost all fish is cooked by being burned on a glowing coconut husk, after which the flesh is picked daintily from around the bones and guts, to be stuffed in with huge mouthfuls of taro.

A vestige of preservation is seen in a peculiar method for saving what little excess fish there might be in these days. All the fish is first cooked in the manner just mentioned. The next day, all of it is again cooked just as thoroughly, and so on day after day. Preservation is said to have been maintained for as long as twenty days this way, but the food is not considered tasty after a week.

There is a kind of stew that is often made by simply boiling some fish -- most preferably a large fish head -- until it is all soft or falling apart. What is left is reheated later and cooked without salt. It is not pleasant eating.

There are too few pigs now to be of any dietary importance. Pork is seldom eaten in other than a ceremonial or celebratory context. In any event, it does not occur as part of the routine diet, but is considered a delicacy worth going a considerable distance to get. There was no evidence that there was any individual prestige race involved in the giving of feasts nor the giving away of animals such as had been found in various parts of Melanesia. A person who raised several pigs was considered to be a good person, socially useful, and willing to do extra work for the community, even though he usually was fully compensated in native money for his effort.

Getting and raising a pig is an interesting process. Typically, the purchase would be made even before birth and the pig taken away within about three days after birth. It was then hand-fed on coconut milk, bits of pre-chewed taro and other soft foods. Formerly it was supposed that women habitually suckled them when necessary, but this is seldom seen today.

The piglet is treated much like a baby in that when it cries it is taken up and cuddled to the warm breast of a woman, fed and crooned to. Its first few weeks are spent in a gunny sack so that it will not stray. It moves and squeals inside the sack. When the women of a house go to a field for work, they take it along and place it alongside the baby.

Pork was usually prepared by boiling all except the guts in salt water. The head and edible parts of the viscera (heart, spleen and liver) were considered to be superior food.

Choice bits for the guest consisted of unidentified bony processes on which one could gnaw and huge gobs of fat. These last were regarded as especially tasty after being allowed to cool thoroughly.

Nearly everyone has a chicken or two roaming about his yard. They are fed only very casually and live in trees. They are athletic birds which take flight like partridges when they are alarmed. In general, they are reserved to treat American guests. Whenever a fairly large feast is planned, chickens will always play a large part. The usual procedure was for the natives to borrow all the flashlights and lamps the night before and raise a terrific commotion with them all night. The next morning they

would come in with one aged, scrawny bird, moaning bitterly about the horrors of trying to catch chickens. Chickens are usually cooked without salt, boiled or broiled. They left much to be desired in both flavor and texture.

Aside from these foods, which are produced by the people themselves, there are certain purchases from the native store which was operated by a Chamorro and Yap man in partnership. Here an occasional can of sardines, bag of sugar or rice, and cigarettes or chewing tobacco were purchased. The most important item was rice. It entered only rarely into daily diet, but was quite essential in providing meals for large assemblies such as would be found at the building of a new men's house.

Rice could be grown on Yap as was experimentally done by the Japanese but the Yaps universally refused to carry on the practice. Usual methods of preparation were in practice, most being simply boiled or steamed in Japanese style, but of course without salt. Then the meat product - a fish, sardines, or bits of cold canned corned beef would be consumed, flavoring huge mouthfuls of the sticky rice.

In the excitement of the typhoon aftermaths, it was decided to distribute relief rations so that no one would starve. While the social connotations of this measure are by far its most interesting feature, the additional meat in the stews and canned beef allowed a somewhat larger protein intake, and made it even less necessary for the men to cease their incessant conversations for a bit of fishing.

For the purposes of this study, it is necessary to examine the Yap diet to see whether or not there is anything peculiar in the nutrition of the islanders which might have a significant part to play in the general phenomenon of depopulation. Three questions must be considered: sufficiency, distribution and preparation.

The first of these problems -- whether or not there is enough food -- can first be estimated by a look at the people. The data of this report, and the opinion of the medical officers on Yap, indicate that there are adequate calories available. This holds through all the social classes and invalidates the speculation that the serf classes are on an inferior diet insofar as actual quantity is considered. It is not possible to determine whether this condition held in the past when the serfs lived more inland and depended on their masters for fish. Although many of them still live in the hinterland, this is really a matter of food quality rather than quantity. A lack of calories is inconceivable so long as the huge daily intake of starchy tubers is maintained.

One of the most telling pieces of testimonial as to whether food was always adequate in the past is the story which is partially true, at least, about the shortage of food long before the Europeans came. This story, coupled with extraordinary feelings of anxiety where food was concerned, leads to the belief that from the earliest childhood, and in a manner which is hard to detect, a lack of food is thought of as one of the

most horrible things that can plague the people. Many of the religious and magical ceremonies involving the welfare of the whole land revolve about a propitiation of angry beings or the supplication that adequate rations be provided. In fact, one of the most important prerogatives of a district chief is that he is supposed to take care of this sort of thing periodically.

Curiously enough, it is not individual poverty, such as we are used to in our society, but a mass shortage involving all the people in a catastrophic famine, which worries the Yap natives. Another important aspect of the Yap religion was the ability of the district chief to cause these famines by an appeal to the magician.

The individual, no matter how feeble, old or sick will always be adequately provided for, even though a younger person who is forced to help will be quite irreverent and grumble about the crazy old man.

In German times, there is no evidence of a vast dislocation of methods for food production. The old-timers think that it was a good time to have lived in. The main complaint was that there was much forced labor on roads, paths, cleaning out of underbrush, etc. The Germans provided trade goods to stimulate copra production. Since the natives care little for anything except tobacco, food and good cutting instruments, there was no doubt a good place where small food purchases could be made.

During the whole Japanese period before the second World War, a policy for making the island pay some sort of economic reward to the Japanese empire was in effect, even though the investment was not yet paying off. Development corporations were brought in to encourage the production of curios and excesses of food and copra for export. Schools were started where the old women were forced to learn new weaving and dyeing techniques.

Scientific methods of farming and new crops were introduced. Natives were trained to run typewriters and do other things with machinery. In all these things, there is a hint of progress and plenty, with the implication of concern for the well-being of the native population. This impression is strengthened by the rather elaborate medical set up.

There is only one hint that perhaps all was not as rosy as it seems insofar as food was concerned. Although there was to develop what few resources were available and to train the natives in new occupations, those who worked away from home had to depend on those at home for food each day.

Much the same situation is now in effect with workers for our Navy. There is not enough cash income to eat well on foreign food, and the great bulk must still be obtained from friends and relatives.

The impression one gets from Japanese times is that there were few people left to produce all the necessary native food. Women

remaining at home had to sandwich field work in between the required work for the master. This situation was greatly aggravated when a garrison of over six thousand Japanese troops and residents tried to live mainly off the island's resources during the war.

It is quite impossible to get an exact picture of the native reaction to the war. In some moods, the people reacted strongly against Japanese injustices. If this opinion was not accepted, informants would complain about the hard and stingy Americans, and picture the Japanese as kindly and paternalistic. It is equally impossible to get a clear picture from the idealized League of Nations reports, which paint a rosy picture in the best traditions of governmental psychology.

Since our Navy has been in charge, the supply of native vegetable foods has been abundant. If there were a need for greater production, many times the present growing areas could be utilized. The supply of fish is low because canoes are so few. It has been stated unofficially that Japanese fishing with dynamite and large nets has lowered the fish population within the reef. Some of the men told us that they had had to depend more and more on Japanese tinned fish, and that adequate numbers of fish were just now coming back. This shortage, however, was temporary and very probably of short duration.

Our conclusion must be, then, that any shortages of food during the Yap depopulation must not have been severe nor of long duration.

In the matter of the even distribution of food throughout the population, one difference might be found in the inadequate feeding of babies or young children. One case which could be observed over a long period of time, and which seemed representative, illustrates native practices in child feeding. It was clear that this three-year-old child was stuffed with the best food available. A typical feeding would be his first meal of the day as he sat in a little cook house attached to the rear of his home. Here taro was steaming hot in the leaf-covered kettle. A leaf-wrapped fish or opened tin of corned beef was waiting as a flavoring or "strong growing" ingredient. To quench his thirst, a drinking nut with a small nail hole driven through it was convenient on the floor.

While he played about and made impatient grabs for the cooling food, later laid out on several banana leaves, his mother would be talking to someone or calling him back if something caught his attention too far away.

She pre-chewed the taro for about a minute, stuffing each firmed mass into his mouth, immediately following it with a bit of the fish or beef. At first he was eager and greedy, smacking loudly while she kept his mouth stuffed full and cheeks bulging.

From time to time, with her help, he would take up the huge coconut and suck from the little hole, finally putting it down

to continue eating. Toward the end of feeding, he was restless and had to be forced to concentrate on his meal.

The total intake was not weighed, but judging from what an adult usually ate of taro and fish, it would have been a huge meal. The child's belly was literally distended and hard. Termination of a meal occurred only when he would finally refuse to take any more, no matter how much his mother insisted.

From birth until these more adult foods can be consumed, the child nurses at the breast, drinks coconut milk and eats mashed banana. This makes a diet which is filling enough, even if it does not contain all possible food essentials. When the family can afford it, the child will drink condensed milk -- this being considered far better than mother's milk.

As children get larger and tend to run about in play groups, or off to school with a lunch, eating is more or less sporadic. Timing and quantity is governed by apetite. If it is not convenient to go home, a relative or friend will usually supply enough food for the time being.

When considering the distribution of food among the social classes, the only factor would be a discrepancy between the upper and lower castes as units. Within these units, distribution would be considered to be equal by the natives themselves.

The only important food item that would be of any considerable interest here is the quantity of fish. As mentioned before, the old patterns made serfs (pimilingai) dependent on their masters for fish. This would be the aboriginal case. It is impossible to know whether there has always been a tendency for the serfs to die young, dwindle over a period of years, or not. In general, if the serf worked well and was generally satisfactory as a tenant, he was always supplied adequately.

The serfs are still dependent to a great extent, as they were in the past. Their food supply is a very delicate matter to investigate, but there is some indication that they get a fair share of the meager catch of fish today. Their share depends on two conditions. One is that since there are few pimilingai for all the land available, they demand good treatment and an adequate supply of fish or else change masters. The second condition is that they have found it more and more expedient to come to Colonia and work for the foreigner, thus being able to get a certain amount of protein for cash wages.

This situation was illustrated very graphically by the complaint of one master that the pimilingai for whom he was responsible demanded cigarettes, corned beef, sardines or money to such a great extent that it was hardly worth having them any more.

Where the serfs worked on a new falu (young men's house) or other village project where food for the whole group was furnished, they got identical types and quantities as everyone else in spite of the enormously complex eating taboos and

regulations. It has even been speculated that these complex rules of eating in themselves might be so constituted that certain classes or ages of people get an inadequate diet. Actually, in all their complexity, they are of importance here only if they are discriminatory.

In the daily observations made on Yap family life, it was never possible to detect any skimping of any individual's rations. There are several conditions under which certain members might be half-starved from strict observance of the system, however. For example, if one large fish were caught every several days and it were reserved for an adult man, everyone else in the family below his ceremonial status would go without. Or if storm destruction ruined all the food available to people of one status at the same time, they would be unable to prevail on friends or relatives outside their status for food.

This latter kind of selective destruction would be nearly impossible because of the small, scattered nature of the growing plots. In other words, storm destruction would ruin a whole series of villages along a coast, and everyone would be in roughly the same fix. In the case of the fish distribution, this kind of catch would be improbable. The factor of individual personality would also enter in. The idealized statements from several old men on this subject are significant. They said that the head of a household must see that the babies and most helpless old people eat first. Beyond this very humane fulfillment of duties, the system operates so that men of the highest ceremonial age grades, then women above menarche, then male children, then girls below menarche are in the hierarchy of preference. There is always the possibility that this ideal of children and old people first is missionary talk, but there is no real reason to think so.

In this respect, the behavior of two of our informants contradict their usual pattern of conduct. One kindly chap who had broken away somewhat from rigid Yap customs almost always ate what was given him on the spot, getting hog fat on some emergency rations which we appropriated for the help, even though his wife was pregnant and he wanted it to be a very good baby.

The other man, even though this was completely out of character for such a scoundrel, invariably shared food delicacies with his wife and mother. His mother, who was a stickler for old Yap customs which theoretically forbade this, rationalized it quite adequately by never letting it become public knowledge.

What happened in the times of famine, when the island was densely populated and a typhoon devastated the crops, is unknowable. Idealized statements from the natives are that all the people would share equally and that no one or all would go hungry. When the emergency supplies were distributed, they were treated just as other Yap food was, and all the rules applied as to who could eat with whom out of a given can. This was not a severe famine, however. It was just a chance to perk up the native rations with beef stew. Indeed, the Yaps hated to see this "emergency" end.

The patterns of exchange among different families in villages and among relatives, friends and ceremonial friends makes it nearly impossible that any one person or family could be rich in food consumed or possessed. For example, the fager or ceremonial friend can demand what one has and search one's basket for it if he doubts one's work. This really happens. People of all degrees of acquaintance ask each other constantly for things which they do not have themselves. The only way to avoid giving is to conceal absolutely the fact that one has something. This concealment is hard to do in Yap.

The elaborate exchange network involving a single individual will illustrate this systematic pattern of distribution very adequately. It is a Yap diary. It was kept in Japanese writing and was disclosed at first through an accident. The writer includes certain embarrassing items which give us a certain amount of confidence that it was not censored or edited to the point of making it invalid for purposes of illustration. The entries in this document seem to make concrete the theory of an almost complete reciprocation of all sorts of valuables, including food, tobacco, liquor and even money. The writer had access to more valuables than most natives, which makes these goods more prominent in the exchange, but the principle is clear.

This diary is a record of almost every day for several months. It includes scandal, gossip and thoughts. It has had to be edited in order to avoid the use of actual names. Here are a number of entries from the text.

> January 1. Several people got together to drink American way. They were . . . (names deleted). I gave three packages of cigarettes, one box of matches, and two bottles of tuba. We ate at . . . house before that on some pig. My wife gave . . ., her girl friend, some food which they ate at her house.
>
> January 2. Ate pig again at . . . house. His wife gave me many betel nuts. My wife comes and takes one chicken and rice and do'og (yam) and lak' (big leaf taro) and mal (small leaf taro) and seven fish to go to her girl friend's and eat again.
>
> January 3. My wife takes fifteen fish to her girl friend's home. The next year she will be expected to return as much.
>
> January 4. Went to . . . village to buy one achif (bottle of tuba) and gave the man some yar (native shell money).
>
> January 6. Get rope tobacco and one file from you. I give . . . some nails to use in copra house clost to falu (men's house).
>
> January 7. Get one butcher knife from you and we give it to . . . for working with you. Give another man some rope tobacco for helping us.

January 8. I pick up some water cans that were distributed by the Navy.

January 9. . . . of . . . village gives me many betel nuts because I had helped him in school and now he teaches school and is grateful.

January 10. I and . . . go fishing but I don't catch many and so . . . caught many and divided with me. If the situation had been reversed I would have given him the same (about one fourth of the catch).

January 19. I give to . . . (the son of the chief) three packs of cigarettes. He asked for them. The reason for three packs is that one is for the chief, one for his wife and one to spare. (Theoretically they couldn't use the same pack, but if there is only one pack available, they secretly share it in most cases.)

January 20. My mother gets one pack of cigarettes and gives to . . . who asked for them. He is related to her through adoption and he asks once in awhile but not often.

January 21. My ceremonial friend from Rumung gave me a basket of betel. I did not ask him, he came to visit.

January 22. Get one half rope tobacco and one dollar from you and give it to ceremonial friend. He did not ask for it.

January 26. Got one rope tobacco and gave it to my wife's brother who gave it to my wife's mother. He did not ask for it, but came to get relief beef and rice and I saw him.

February 8. I get twenty fish from chief's son but I hadn't asked for them.

February 10. . . ., (an old woman ceremonial friend to my mother) brought me one basket of taro for which I hadn't asked. She had gotten by way of me through my mother some cigarettes just a day or so back.

February 15. I gave same woman seven fish because she is all alone and needs fish.

The most elaborate of these exchanges cannot be detailed in this cryptic manner, but they illustrate the continuous reciprocal transfer of portable commodities which goes on in Yap.

When we come to deal with the effect of food preparation on its nutritive content, the answer is clearly negative. A simple steaming, boiling or roasting constitutes the normal preparation. None of these processes will cause any great loss of food values that is not common to huge groups of peoples in the world, having the most varied reproductive patterns.

A consideration of the Yap diet as a whole seems to indicate that the carbohydrate sources, which are mostly root crops, provide most of the calories. In view of the abundant supply of these tubers available to the natives, it is unlikely that they are suffering from a lack of calories.

The orange groves of Yap are more in evidence than in most other Oceanic islands. Although oranges vary greatly in their content of Vitamin C, it is fairly likely that the natives get at least as much of this vitamin as other Micronesians.

The supply of fish in Yap is not yet restored to its former abundance, but it was not scarce during much of the depopulation. By eating the head and viscera as well as the muscles of the fish, the people obtain fat-soluble vitamins and minerals. Another valuable food source is shellfish. As fishing equipment and boats become more plentiful, it is likely that the native dietary will improve. The people could benefit, too, from an increase in their livestock -- particularly chickens and eggs. Aside from the possible deficiency in the B-complex which Alpert mentions for all of Micronesia, it is unlikely that the Yap diet is seriously at fault, and still less likely that it is bad enough to be a major cause of the depopulation. It seems, on comparison, to be at least as good as it is on most other Micronesian islands, if not better.

In this consideration of the Yap diet, it is assumed, without conclusive proof, that the total pattern of nutrition has not radically changed since the land was swarming with people. It will now be instructive to compare the teeth of the Yaps with those of the aboriginal Guamanians. Naturally, a dentist such as Leigh can make observations on skeletal material which are impossible on the living, but it is nonetheless possible and profitable to make reasonable comparisons of these two peoples, using the skeletal data from Guam and observations on the living adults of Yap.

Leigh notes that the majority of the Guamanians showed an edge-to-edge bite in which the edges of the upper and lower incisors met when the jaws were closed. He does not cite figures, however. This kind of bite is rare except in old age in civilized man. In young people, it is usually interpreted as a sign of primitiveness and good nutrition, and is much commoner outside civilized areas. Many primitive peoples, however, have excellent teeth and have at the same time the slight overbite which is most usual in civilized individuals with good teeth.

The figures on the bite among the Yap people are cited below.

Table 3

Occlusion of the Incisors in Yap Adults Percentage Frequencies

| | Males Age 20-49 Years | Females Age 18-49 Years |
|---|---|---|
| Number of individuals | 343 | 129 |
| Underbite | 2.0 | 3.1 |
| Edge-to-edge | 45.2 | 43.4 |
| Slight overbite | 43.2 | 40.3 |
| Pronounced overbite | 9.6 | 13.2 |
| Cross-bite | - | - |

Chi square = 1.672. p = .65 at 3 degrees of freedom. Therefore the sex difference is not statistically significant.

This comparison indicates that the Yap people show a slight preponderance of the edge-to-edge bite, but are perhaps not so primitive as the old Guamanians in this respect. The pronounced overbite is not as common in Yap as it is in most American communities.

The major kinds of bite which are considered pathological by dentists are overbites where the upper incisors fail to meet the lowers, underbites where the lower incisors close in front of the uppers, or cross-bites where the tooth rows cros in occlusion. Other considerations include the contact of cusps in the molar teeth. As the table indicates, underbites and pronounced overbites occur in about one native out of eight, and no cross-bites were seen at all. Although there are undoubtedly primitive groups with more perfect occlusion than the Yap people, it seems likely that they excel most civilized communities in this respect.

Leigh notes that reduction in size of the upper third molars and large lower third molars with frequent impactions were common in the ancient Chamorros. The same is true in the modern Yap community.

If we consider the degree of crowding in these two populations, it appears that the Guamanians were better off. Leigh notes that only 15 per cent of the skulls showed any teeth out of line with the bite. The percentage of individuals with any crowding is considerably higher in Yap. This crowding, when it occurred, was generally confined to the lower incisors and canines in Yap, such that few teeth were rotated or out of line. These conditions were not obvious except when the individual was given a dental examination. This level of severity was recorded as "slight" crowding. "Pronounced" crowding, however, usually involved all the lower front teeth and premolars, with gross displacements and rotations. In many "pronounced" cases the upper front teeth were likewise out of alignment..

Table 4

Percentage Incidence of Crowding of Teeth - Yap Adults

| | Males Age 20-49 Years | Females Age 18-49 Years |
|---|---|---|
| Number of individuals | 343 | 130 |
| Crowding Absent | 42.7 | 61.5 |
| Crowding Slight | 46.0 | 28.5 |
| Crowding Pronounced | 11.3 | 10.0 |

Chi square = 14.67. p = .001 at 2 degrees of freedom. Therefore the sex difference is statistically significant.

As the table shows, "pronounced" crowding is not very common. Even the severest cases were seldom as serious as one can see repeatedly in an orthodontic clinic, and were not accompanied by deformities of the face such as asymmetry or deviations of the nasal septum of the kinds which lead to mouth breathing in many Americans. The chart shows an interesting sex difference in the incidence of "absent" crowding. This difference will be discussed later on in connection with other sex differences in the teeth.

In harmony with their similar habit of betel chewing, both the prehistoric Guamanians and the present people of Yap show a pronounced brown discoloration of the surfaces of the teeth. Some of the Guamanians, especially females, seem to have blackened their teeth intentionally at puberty. This custom was formerly universal in Yap females and is still sporadic. It is apparently harmless to the teeth.

This betel discoloration on Yap teeth can be removed by discontinuing betel chewing and then spending weeks in diligent brushing. In one case the stains were removed when a Yap woman had her teeth cleaned with abrasives and dental equipment. These instances of cleaning Yap teeth indicate that the natives' dental enamel is resistant to staining from the betel quid, just as it resists attack from caries.

There is no evidence that betel chewing causes or aggravates dental caries. This custom is prevalent in the westernmost islands of Micronesia, but not from Ulithi eastward. Hartmann found no significant difference in the incidence of caries and acidogenic bacteria between Yap children who used betel and those who did not.

Returning to the ancient Guamanians again, it looks as though they had somewhat less caries than the modern Yap people. Out of 106 skulls, Leigh found caries in only 19, of which eleven were senile with caries beyond the cervical point where the dentine is exposed--an area which is protected by the gums in younger individuals. Caries were definitely rare in younger Guamanians. Leigh notes, however, that many Chamorro molars had faults and fissures where the cusps coalesced. These are

features which can easily be mistaken for caries in the living without X-ray examinations, studies of extracted teeth, or skeletal material. It is therefore fairly probable that dental X-rays or work on Yap crania would reveal that many so-called "caries" in Yap molars are actually slight hypoplasias of the enamel. This interpretation is supported by the fact that these small pits in Yap molars usually have hard walls resistant to probing, unlike most active caries in civilized man, whose soft walls yield to the dental probe and make it stick to the decayed area. Furthermore, these pits in Yap generally disappear when the teeth wear down sufficiently and seldom lead to abscesses.

Caries and other pits in Yap teeth are most often found on the biting surfaces of the third molars. In adolescents they are commonest on the second molars, but wear soon obliterates them, so that few adults have caries there.

Table 5

Dental Caries in Yap Adults

| Age | Number of Males | Per Cent of Caries | Number of Females | Per Cent of Caries |
|---|---|---|---|---|
| 15-19 | 38 | 2.48 | 25 | 2.09 |
| 20-24 | 74 | 1.71 | 23 | 0.73 |
| 25-29 | 82 | 1.88 | 33 | 2.05 |
| 30-34 | 83 | 2.00 | 19 | 2.74 |
| 35-39 | 67 | 1.33 | 21 | 1.59 |
| 40-44 | 25 | 2.08 | 12 | 2.92 |
| 45-49 | 14 | 1.58 | 9 | 2.34 |
| 50-54 | 6 | 10.45 | 9 | 2.84 |

These figures indicate that the teeth of the Yap people are highly resistant to decay. The high percentage of decayed teeth in the small group of males aged 50 to 54 results from data on one highly acculturated man with the worst teeth in the series. In general, it appears that dental decay is not the major problem for the Yap people that it is for most Americans.

The loss of the teeth was another phenomenon which Leigh studied in the prehistoric Guamanians. He found that in his series of skulls, destructive changes in the sockets of the teeth set in, with the onset seldom before the age of 35 years. These changes led ultimately to the loss of the teeth. He found that no Guamanians under the age of 30 had experienced such loss; whereas 64 per cent of the group over 30 had lost one or more teeth. Females experienced more severe dental loss than males. The destructive changes in the jaws led to a complete loss of teeth in older individuals.

Leigh thinks that irritation from betel chewing, lime deposits on the molars, a possible shortage of Vitamin C, climate, heredity or living habits of the Guamanians might have led to their loss of teeth. He notes, however, that the incidence of this loss in the Guamanians was notably less than in most civilized Whites.

When we come to consider the loss of teeth in the Yap people, a similar situation exists. Any superficial observer in Colonia can see that the natives lose teeth in middle age. Old people seldom have any teeth at all. This loss of teeth is preceded by a marked recession of the gum line. The teeth become loose and sometimes blackened, indicating that the tooth is probably dead and that substance has been lost from the tissues investing it. Although we cannot see the bony socket in the living individual, it is likely that it, too, has deteriorated. Eventually the teeth fall out. Elderly individuals who were interviewed on the subject claimed that there is seldom much pain connected with this loss of teeth.

The following table shows the average number of teeth in the mouth, together with standard errors and standard deviations, at different ages and for both sexes in Yap.

Table 6

Number of Teeth Present in Yap Adults

| Age | Number of Males | Mean Number of Teeth in Males | Standard Deviation | Number of Females | Mean Number of Teeth in Females | Standard Deviation |
|---|---|---|---|---|---|---|
| 15-19 | 38 | 28.6± .2 | 1.3 | 25 | 28.7± .2 | 1.1 |
| 20-24 | 74 | 30.1± .2 | 1.7 | 23 | 29.9± .4 | 1.7 |
| 25-29 | 82 | 31.2± .2 | 1.4 | 33 | 31.1± .3 | 1.5 |
| 30-34 | 83 | 31.3± .2 | 1.5 | 19 | 30.8± .4 | 1.5 |
| 35-39 | 67 | 30.4± .5 | 4.3 | 21 | 30.0± .6 | 2.7 |
| 40-44 | 25 | 26.9±1.6 | 8.2 | 12 | 28.6±2.0 | 6.0 |
| 45-49 | 14 | 26.1±2.1 | 8.2 | 9 | 28.4±1.6 | 4.7 |
| 50-54 | 8 | 22.3±4.7 | 11.6 | 9 | 26.4±3.6 | 10.1 |

The most apparent feature of this table is that the Yap people, like the prehistoric Guamanians, show a loss of teeth which begins in some individuals after the age of 35. The data show this phenomenon in two ways. One is that the average number of teeth in the mouth declines from the middle thirties on. Even more significant is the sudden rise of the standard deviation at this age, indicating that some of the natives are rapidly losing teeth while others are not. By the fifties, both sexes have usually lost several teeth, but the rate of loss reaches a maximum of variability, as shown by the standard deviation.

The sex differences in the number of teeth are of great significance. Other data (not presented here) indicate that most of the natives erupt their third molars between the ages of 20 and 24. The females are more likely to have unerupted third molars than the males, and consequently show a consistent slight difference in the average number of teeth in the mouth from the ages of 20 to 39.

From the forties on, however, the trend runs consistently in the opposite direction. The males tend to lose teeth more rapidly, unlike the situation in the prehistoric Guamanians.

The general conclusion on the teeth of the Yap people is that they are somewhat more crowded, with more overbite than those of the Guamanians. In other respects, however, they are fairly similar. In view of these facts, it seems doubtful whether much, if any, progressive deterioration of the natives' teeth has accompanied the depopulation.

This loss of teeth in the Yap people has still further possibilities of interpretation in terms of physical deterioration. This interpretation has to do with the effects of pregnancy and lactation on the female organism. From conception until weaning, the child makes constant demands on the mineral resources of its mother. To feed the growing infant, a malnourished mother may actually have to rob her own bones of minerals. This depletion has an adverse effect on her skeletal tissues, particularly the bony sockets of her teeth. As a result, millions of mothers in civilized communities have lost teeth to feed their children. Among populations suffering from physical deterioration, we should expect that women should lose their teeth faster than men as a result of bearing and suckling their offspring.

When we make allowances for the peculiarities of third molar eruption in the female, it is perfectly clear from the data that Yap women do not rob their jaws to feed their children. We can make a further inference that the Yap diet probably has no serious shortages of bone-building minerals of such a kind that would prejudice the welfare of the mother or child during pregnancy or lactation.

There is still another historical approach to the question of physical deterioration. It so happens that five different investigators have measured series of living natives on Yap, extending from 1878 to the present. By comparing their results, inadequate though most of them are, any gross changes in the stature and head form of the natives will become apparent.

Table 7

Successive Anthropometric Studies of Yap

Adult Males

| | Miklucho-Maclay (1876) | Hambruch (1906) | Hirako (1915) | Hasebe (1927-1929) | Hunt (1948) |
|---|---|---|---|---|---|
| Number of Individuals | 30 | 7 | 8 | 46 | 347 |
| Range of Stature (cm) | 150-169* | - | 159-171 | - | 146-178 |
| Mean Stature (cm) | - | 164 | 164 | 160 | 160 |
| Nose Breadth (mm) | - | 41 | - | 42 | 42 |
| Head Length (mm) | - | 188 | 191 | 189 | 188 |
| Head Breadth (mm) | - | 146 | 150 | 146 | 150 |

Adult Females

| | | | | | |
|---|---|---|---|---|---|
| Number of Individuals | 11 | - | - | - | 130 |
| Range of Stature (cm) | 136-148 | - | - | - | 135-164 |
| Mean Stature (cm) | - | - | - | - | 150 |

* Miklucho-Maclay cites the tallest man in Yap in 1878 as 178 cm. tall. This is the same stature as the tallest man in the most recent series.

It is obvious that most of these samples are too small to be taken seriously, but the fluctuations of stature do not indicate any clear trend, nor do those of nose breadth. It is reasonable to conclude from this evidence that the Yap people today are much the same size as their ancestors before the depopulation in head form, facial shape, and stature. None of these figures could be used as evidence of physical deterioration during the past several decades.

Still another field of comparison is possible in estimating the physical deterioration of the Yap people. A series of body build or somatotype photographs is available for both sexes in Yap. These pictures were taken in the native costume, but are none the less useful for the visual assay of trends toward roundness (endomorphy), muscularity (mesomorphy) and leanness (endomorphy).

Although universal agreement has not yet been reached in rating these three trends of body build, it is profitable to compare ratings done in the same laboratory on different series. In recent years, the Statistics Laboratory of the Peabody Museum has analyzed the body build photographs of a large number of Negroes and Whites who were being separated from the United States Army. These individuals are better physical specimens than American males as a whole. The Yap series was done in the same laboratory by Mrs. Emma Hooton Robbins, who is one of the most experienced members of the laboratory staff and has worked extensively on the Army series. The following table compares Yap females, Yap males, Army Negroes and Army Whites.

Table 8

Percentages of Body Build Classes, Yap, Negro and White

| | Yap Females Age 18-49 | Yap Males Age 20-49 | Army Males Negro | Army Males White |
|---|---|---|---|---|
| Number of individuals | 130 | 347 | 3,051 | 37,658 |
| Thin, non-muscular, elongate | - | 1.73 | 5.05 | 2.94 |
| Thin, submedium musculature, elongate | - | 6.34 | 3.28 | 2.27 |
| Thin, medium musculature | - | 2.30 | 0.60 | 0.69 |
| Sub-medium, non-muscular, medium & elongate | 15.4 | 5.19 | 6.23 | 5.45 |
| Sub-medium, sub-medium musculature | - | 21.32 | 27.86 | 14.70 |
| Sub-medium, medium musculature | - | 16.43 | 12.42 | 6.86 |
| Sub-medium, muscular | - | 3.46 | 1.80 | 2.38 |
| Medium plump, non-muscular | 64.7 | 0.29 | 1.87 | 3.05 |
| Medium plump, sub-medium musculature | 1.5 | 16.14 | 13.44 | 17.70 |
| Balanced, short to medium | - | 16.71 | 16.32 | 16.52 |
| Balanced, tall | - | - | 0.29 | 0.81 |
| Medium fat, muscular | - | 7.49 | 1.77 | 5.55 |
| Fat, non-muscular and sub-medium musculature | 13.8 | 0.58 | 3.61 | 6.56 |
| Fat, medium musculature | - | 1.15 | 3.41 | 7.79 |
| Fat, muscular | - | 0.29 | 0.39 | 1.79 |
| Very fat, non-muscular and sub-medium musculature | 4.6 | 0.29 | 0.92 | 1.78 |
| Very fat, medium musculature | - | 0.29 | 0.69 | 2.65 |
| Very fat, very muscular | - | - | 0.07 | 0.49 |

The differences between the sexes of Yap people are nothing startling. The females are deficient in the muscular classes and have more fat than the males. It is unfortunate that the Yap females cannot be compared with a series of American women.

The males, however, can be compared directly with their American counterparts. The most general finding here is that the Yap men are commoner in the lean and muscular classes of build; the Negroes in the skinny classes, and the Whites in the fat categories. To restate the case: the Yap males run to ectomorphic mesomorphy and mesomorphy. The Negroes run more to ectomorphy, as well as to combinations of deficient endomorphy and mesomorphy. The Whites tend toward endomorphy.

Mrs. Robbins thinks that the Yap people as a group are among the more perfect physical specimens that she has worked with. Scrawny and underfed-looking individuals are rare in both sexes. Even in middle age, obesity is uncommon. There is nothing in the data on body build to suggest any widespread physical deterioration in Yap.

Alpert has characterized a number of nutritional stigmata in the Micronesians. Although he did not examine Yap natives for these symptoms, they do occur on Yap. Some individuals show fissuring of the tongue, but vascularized conjuntival tissues were not apparent in the eye examination. Nutritional specialists are not in agreement as to the etiology of these characteristics. It is possible that they can arise from causes other than malnutrition. The fissuring of the tongue might result from betel nut irritation. If it is a legitimate sign of malnutrition, however, it indicates a possible deficiency of the B-complex, and more particularly niacin.

We have mentioned that Alpert found a lag in the growth of Micronesian children. They are often thin and look younger than their stated ages.

Although the Yap data on this subject are not yet in final form, it appears that the average age of first menstruation in girls is about 14.3 years. Most recent studies of this phenomenon in American girls place the average at somewhat less than a year earlier.

The statural growth of the Yap male apparently ceases at about 24 years, and in the female considerably earlier. The average age of third molar eruption is apparently in the early twenties. In Americans, all these phenomena are probably more precocious.

Although the Yap people apparently develop more slowly than Americans, such a lag is not necessarily a sign of malnutrition. As Mills (1942) has pointed out, slower maturation often occurs in warm, moist climates even when diets are optimal.

There is no evidence, either, that physical deterioration in Yap has progressed to the point where difficulties in childbirth are characteristic. The obstetrical experience of the medical officers in Colonia has been quite to the contrary. In most cases, the mother leaves the obstetrical ward soon after birth, walking under her own power and carrying the child. Evidently the Yap diet is not bad enough to prejudice seriously the success of deliveries at term.

A final biological question which must be faced is whether any mammalian population, human or otherwise, could live on Yap during the depopulation and still increase in numbers. Three "experimental controls" can be used in dealing with the problem: dogs, Chamorros and Japanese.

The Yap people keep numerous lean and mongrel dogs about their premises. These animals are fed on taro, coconuts and fish. They look nowhere nearly as well-fed as the natives, although they eat a reduced Yap native ration. Nevertheless, they are highly prolific. Periodically, some of them have had to be killed in order to control their increase. A Yap village will usually have more pregnant bitches in it than pregnant women.

The Chamorros are another case in point. These people from the Marianas lived in a settlement north and west of Colonia from the end of the last century until 1948. Their diet consisted of taro and fish, like that of the natives, but with the partial substitution of bread and other store food. They kept more livestock than the natives, and bought more rice as well. As we have seen, the teeth of their children were more carious than those of the natives, but less so than in most American urban children.

It is unfortunate that more vital statistics on the Yap Chamorros are not available. These people were moved from Yap to Tinian during the stay of the Harvard expedition on Yap. During the Japanese administration, the Chamorros were probably more prolific than the natives. A rough estimate of their crude birth-rate in 1946 gives at least 30 per thousand, but as the census data indicate, the native birth rate has been similar since the American occupation of Yap.

Japanese living within the Yap administrative district (which included all the islands from Ngulu to Satowal) were mainly concentrated in Yap itself. Their crude birth rates, according to the Civil Affairs Handbook (1944), page 36, ranged from 29.6 to 44.4 at various times from 1924 to 1937.

This evidence indicates that both dogs and human beings were capable of a high birth rate in Yap at a time when the native population was declining. The data from the present census shows that the natives, too, are capable of a high birth rate if social and environmental conditions are suitable. In gross physical state they are not much, if any, worse off than their ancestors.

We must now consider, however, the role of diseases other than those of physical deterioration, the medical activities of both natives and outsiders, and the possible effects of all of these factors on the population decline.

A survey of native medical practices will form a background against which to evaluate the medical efficacy of the foreigners. It will allow us to see the tremendous educational gap that must be overcome before good medicine can be practiced in Yap on a voluntary basis.

The extent of native treatment by means of herbal remedies is quite large. Mr. Clarence Wong, a botanist from the University of Hawaii, was on Yap with us for some time and made a very complete survey of plants which are useful to the natives. He

collected a large number of specimens, packed them and shipped them to Harvard and Yale. Some examples of his findings are cited here.

One species of plan (Ryncospore) is used for relieving tiredness or to prevent a shortage of breath. It is used medicinally by cutting the lower section of the pedicel where it is soft, about eight inches down. The person chews the pedicel and swallows the sap that comes from the flower stalk.

Another plant, unidentified as yet, is for a general rundown condition, accompanied by a loss of the use of hands and legs, sleepy feelings, swellings, and general weakness. The individual is usually born with these tendencies. The entire plant is pounded and placed in a piece of coconut cloth, then squeezed into a betel nut bowl. The gratings from a mature coconut are mixed in and the compound drunk.

A long vine, Derris trifoliata, is a remedy for broken bones. It is cut off about four feet above the ground, pounded lightly and then wrapped around the area of the fracture.

For simple rash and swelling, the leaves of Cassia alata are bruised till the sap stands out on them. Then the mixture is rubbed on the irritated spot.

For treating open cuts, there are several remedies, all essentially similar but using a variety of plants. One is Vernonia cinera. The leaves are bruised and rubbed on the cut. Another unidentified plant is especially good to stop bleeding. In this case, the entire leaf stalk and leaf is used after being pounded into a pulpy mass.

For a fever with pain in the arms, chest and legs, one can take the roots of Premna integrifolia, pare them and squeeze them through coconut cloth into a betel nut bowl. Coconut gratings are added and the mixture taken internally. An additional medicine can be made by mixing with the above the scrapings from the inner side of the fruit of Parinarium glaberrinum.

If one has a swelling of superficial veins, a mixture of an unidentified plant is used. The entire plant is squeezed through coconut cloth after being pounded, mixed with coconut water and consumed.

For a sore throat or sores in the mouth, an unidentified plant is chewed and swallowed, depending on the location of the soreness.

For stimulating the heart, the stem of Bruguiera conjugata is scraped and the mixture squeezed into a bowl to which coconut water is added and the mixture consumed.

For coughing spells, an unidentified plant is prepared in the same manner as above and consumed.

For general pain, the squeezed out juice of Diospyros is mixed with coconut oil and smeared on the whole body.

If one has a sprain, there are two ways of using Morinda citrifolia. In one case, sap from the terminal leaves is rubbed on the spot. In the other case, the leaves are heated to be applied to the spot.

To treat a painful stomach and bloody stool, the scrapings from the stem of Scaevola frutescens are squeezed with the hand into a half coconut and drunk. It is bitter, but is supposed to make the person feel better.

For cracking of the feet by the sun and rain, and to stop the foul odor ensuing, some unidentified leaves are heated over a fire and held on the feet till the heat dissipates itself.

It is possible to cure eel bites by taking an even number of leaves from Nephrolepa acuta, pounding them, and squeezing them on the bite.

If a baby has diarrhea, the young leaves of Cassia simaea are pounded and mixed with coconut water and fed to the child.

For headaches, blurred vision and fever an even number of stems of Wedelia biflora are boiled in a pot. The patient inhales the steam and then drinks the mixture.

To treat open yaws sores, the leaves of Codiaeum variegatum are drained of sap and added to coconut milk. This viscid mixture is then placed on the open sore.

The actual efficacy of these remedies could not be determined without an extensive pharmacological investigation together with follow up case studies. It is reasonable to assume that there is some medicinal value in at least a few of them.

More important, however, is the fact that almost always a magical element enters into the treatment which is at least as important as the herbal applications in the Yap mind, if not more so. For example, standard practice is to consult a man who knows how to make the proper divining magic before either appealing to a magical being or prescribing a medicinal remedy or both.

The brother of a district chief was very ill, and had been for about five months. Several relatives and the village chief held a meeting to discuss what to do with the sick man. At the meeting, the village chief, who happened to be a diviner, tried to decide by divination what magic being should be appealed to in order to make the man well.

This divination was in the same way that the German authors have observed: by using a series of knotted strips, manipulating them through the fingers and counting the knots still showing above the fingers. Then the diviner made a pig (magical formula)

to the magical being designated. If the patient were not better by the following Friday, the people decided to take him to the hospital.

This patient had been having treatments with Yap herbal medicine for his heart and breathing for several months, in conjunction with innumerable pigs made to various thagiths (magical beings). There is no hesitancy in trying one pig after another until the being which was offended is made happy again. The most that could be determined in this case was that some deed or word must have been the offending element.

Two of the younger men wanted to take him to the hospital immediately, but the chief insisted that they wait until this last pig had a chance to work.

More of this sort of psychological and magical approach to the problem of sickness and disease has been noted in the section on religion, where in most cases the rituals deal with large numbers of people at one time.

One of the earlier workers (Müller, 1917) gathered some material on medicine and sickness in Yap, parts of which are pertinent here.

The natives, according to Müller, made a distinction between sickness and epidemics. Contagious diseases such as syphilis are included in the former. Views on causation varied greatly. One man who was a priest said that all the natives believe that every disease can be caused by sexual intercourse, although they may have other origins as well.

This theory, however, is not based on the theory of contagion as we know it, but on the premise that coitus itself may at many times be harmful. Müller thinks that this is probably the basis for many sexual taboos. The natives all understood that gonorrhea is caused only through sexual contact.

Elaphantiasis was believed to result from having sexual relations on the night before a large fishing expedition. Women might catch this disease from eating fish caught with a new net without first guarding themselves against the disease by magic. If a person consumes food from a dish belonging to another age grade or the opposite sex, he will get an ulcerous skin disease.

Many diseases ascribed to ghosts are believed to be the sole cause of epidemics called misilipig. The demon who causes misilipig has this same name, and is a male. Several other names such as Madai, Mo'onian, Marilang and Mangaranger denote other groups of demons.

Misilipig causes temporary illnesses such as dysentary. The other demons cause chronic ailments. A Mangaranger caused the cough of one old man whose chest was being tickled by the bent fingers of the demon.

The Madai, who are demons of the sea, cause elephantiasis. They may be the agents in the discussion of elephantiasis above. They may be though of as punishers when anyone transgresses the taboos having to do with sea food.

A kan (spirit) in the head is thought to cause mental illness. There are a number of psychotics in Yap. They are treated with great respect, and may even form new religious sects.

Müller lists several medicinal ideas which are covered more completely in Mr. Wong's work, but makes one statement of some additional interest. He notes that although the recipes for medicines are quite simple, they are always the property of their inventor of recipes, although his function is not as we would think of a doctor's work. His reputation varies with the efficacy or failure of his medicines.

Müller summarizes the essential material from the work of Dr. Born, who was a physician and who spent some time on Yap. Born's work is based on Tomil district, for which we have no data of this kind, so some of his pertinent points will be covered.

In all of Tomil there were only five medical practitioners. One specialized in skin diseases, regardless of their origin. He used only one medicine in treatment, similar to the one recorded by Mr. Wong, which is an oily greenish paste. The injured part was first washed off with salt water, and then the paste applied for three days. This treatment was repeated as often as necessary.

Another treated gangosa with a simple fruit paste, placing the mixture on the injured parts of the nose and in the nostrils.

Another helped women to produce beautiful children by means of two remedies. The first was a herbal mixture which the woman consumed four times a month during pregnancy. The second was an aid during confinement itself. Beginning with the seventh month of pregnancy, a plant that had been thoroughly washed in salt water and rolled up was inserted into the vagina for three days, during which time it swelled and extended the birth canal. Every three days it was replaced by a larger roll. This procedure was supposed to make childbirth easier.

Another man used to be a surgeon for warriors. Before a battle the warriors chewed or ate the fruit of a certain plant. While this could not protect them against all injuries, it did protect them from injuries to the heart and liver which the natives feared most.

Three or four other medicines were used as safeguards against infections resulting from spear wounds to the head or body. The basis for this was protection against internal bleeding.

For a wound in the stomach, a medicine was taken internally and a paste was made for wounds where pus had formed. If a battle were at sea, every boat had a medicine to protect against the harmful effects of sea water.

After the battle, a physician examined all the men who were unconscious and spat a mixture of medicine in their faces. If they squinted their eyes, it was possible for them to be cured and they were treated.

Another practitioner specialized in injuries received in fights during peacetime. A medicine was applied to the injured part as a local anesthetic in setting bones, and also for neuralgia or rheumatism.

Numerous other remedies were mentioned which are too similar to previous ones to deserve further attention here.

Native surgery in Yap is quite primitive. For a headache the physician punctures the mucous membranes of the nose with a prickly pandanus leaf to effect a nose bleed.

Müller continues with a few observations of his own on surgery. Pustules and abscesses are opened with squilla scissors. In treating certain scaly skin diseases, the skin is lacerated before medicine is applied.

There is some reference to cutting the abdomen for caesarian cases, but no instances are cited. Müller says that Hernsheim discusses a drastic remedy against a certain kind of inflammation of the throat, accompanied by coughing spells, which usually resulted in death after a few days. When the epidemic started in one village, the people of neighboring villages got together and attacked that village. They killed as many people as possible or drove them back to the hills and burned all the houses.

In addition to the medicines given, there were several poisons mentioned: one from a vine and another from the blood and mucous of menstruating women mixed together with the fatty substance which corpses secrete through the mats. This latter medicine is also mentioned by Born.

The history of foreign medical activities in Yap began in a small way with the arrival of the Spaniards. Most of the material on this early period must be gleaned from reports to the German Reichstag. They are labeled "German Government" in the Cross Cultural Survey at Yale in the section covering Yap Island.

The following is a paraphrase summarizing statements made by a deputy district officer in 1901, 1902 and 1903. He said that admittedly a long time would be necessary before the Yap people acquired enough confidence in German medical facilities so that they would voluntarily bring their sick people to Colonia and leave them there in the hands of the doctor. Everything that was done for sick people was new to them. Although the Spaniards had had a military doctor at the disposal of their troops since 1885, practically nothing was done for the natives insofar as health was concerned. With the strong dislike of the natives for everything connected with the Spanish government, even so zealous and humane a person as the last Spanish doctor could have found no field of activity among the Yap people.

The last three years of German rule allegedly sufficed to create quite a different picture. The people of Yap came to have the greatest confidence in the District Office. The word Blelach (the island on which the District Office was situated) no longer meant the same as prison. The natives naturally resisted sanitary measures strongly, and slow, careful tactics were required in order not to intimidate the people. In this respect, the writer was greatly helped by the necessity of making himself acquainted with administrative matters, mingling daily with the influential chiefs, and gaining their confidence. They soon began to come with minor complaints which were generally easily cured, and gave the doctor the desired opportunity of demonstrating to them the effectiveness of medicines and of simple first-aid.

Another statement from the same source, and covering the same years, is as follows: the rooms in which sick people are lodged naturally did very little to meet the demands that must be made on a hospital intended primarily for surgical cases. The buildings already available had to be used. The old hospital of the Spaniards, situated in what became the Government Experimental Garden, could not be considered, since it was unsuitable for various reasons of sanitation and convenience. The question of a site and water were finally settled and the building of a new hospital was begun.

The necessity of having special facilities for children was shown by the large number of them who were treated. Most of the diseases treated began in early youth. Gradually the Yap people became persuaded that it was a good idea to send in their children for treatment, in order that the complaint might not continue to an advanced age.

The hospital routine was very simple. The patients were cared for and waited on by two hospital orderlies and a boy being treated at the time. Medical service began at 9:00 in the morning with washing, baths and bandages. At this time, any sick soldiers of the police troop or inhabitants of Colonia also presented themselves. By noon, all the male patients had generally been taken care of. At 2:00 p.m., operations were performed or minor surgical aid administered. At 4:00 p.m., work began on the women's hospital. This generally was finished in from one to two hours' time.

The end of the daily medical round usually consisted of smearing gray ointment onto those patients who needed it. For reasons of convenience, the patients formed a circle, and each rubbed the man in front of him and was rubbed by the man behind.

Patients provided their own food except for an occasional can or two of meat. Since it was considered important that chronic cases be hospitalized for several months, he had to be fed at least as well as he would be at home.

In further reports of the same year, the presence of lung complaints, skin and venereal diseases were noted during a health survey of the natives. Malaria, dysentery and similar tropical diseases were fortunately completely absent.

The district office had 528 people inoculated: 438 men, 23 women and 67 children. It was felt that although the state of health of the natives was unfavorable and there was no mistaking its decline, that there was hope for the future in the compliance of the natives and their understanding of the doctor's task. His short period of activity already showed fine results. The intelligent native did not resign himself fatalistically to his destiny, but came voluntarily,once the prejudice against a white doctor was done away with. The doctor reported that health conditions among the foreign white population were completely satisfactory.

During this same time, reference to a possible epidemic is noted which might accidentally be spread from Hongkong, where the plague raged every summer. An island situated near the Regional Office and connected with it by an embankment was leased and prepared as a quarantine station. Ships without a clear bill of health were cleared only from this station, the goods being disinfected there and then released.

It was further reported that fatal illnesses were only partially to blame for the depopulation. The disfiguring skin diseases such as frambesia were considered to be equally responsible, but in a different way. That is: the young people of both sexes who had these complaints were often in a a disgusting state of appearance and it was against all custom to have sexual relations with such sufferers.

Reference is made from 1901 to 1903 to the fact that the one or two native assistants available were very skillful and willing, but not enough help. The doctor then evolved a plan so that each district chief would send in one boy for four weeks where he would get medical training. Then this boy was to return to his district with supplies and set up aid stations. These trainees would give first aid, try to select cases to come in to the hospital and over a period of time get further instruction and training.

In 1903 and 1904, it was noted that native health was still poor. The treatment of skin diseases demanded the greater part of the doctor's time and made a large number of operations necessary. There were still 300 to 400 ulcerous cases in the interior. One of the chief steps in control was the educational program, which was to enable the ulcers to be detected at an early stage of development. Diseases of the respiratory tract occurred among the natives all year, from the simple cold to the most severe cases of tuberculosis. It was extremely difficult to combat tuberculosis because the living conditions and climate continually fostered colds, and religion and superstitions were closely connected with the frequent occurrence of these respiratory diseases. Operations were undertaken in a great number of cases, all using chloroform narcoses. A sign of progress was noted in the fact that native women began to consult the doctor on gynecological problems. The natives also suffered from <u>safrit</u>, a disease of the blood, and from pulmonary tuberculosis. Chamorros and Filipinos especially suffered from the latter. There were 420 patients in all, and a large number of

them were put in the temporary hospital. The crews of Japanese sailing ships were being carefully examined, especially for venereal diseases. Sailors found to be suffering from any contagious diseases were forbidden to land.

In another report, covering up to 1905, new references to quarantine control occur. There were a few new cases of venereal diseases, most of them being gonorrhea or scrotitis. In the course of the sanitation officials' inspection of Japanese boats, some cases of chancre were found. In Yap harbor, which had steamer connections with both China and Japan, no new cases of syphilis were found. The quarantine officials tried to examine incoming ships' crews for venereal diseases as well as cholera and the plague.

During the same period, a reference to preventive medicine is made. The doctors continued to enlighten the natives on social hygiene, by means of assemblies called for this purpose. The women were taught the importance of care for the newborn infant. The sad case of a newborn child which became blind in both eyes as a result of gonorrhea was used as an example and warning to watch the eyes of a child after birth and to call the doctor immediately should any symptoms be noticed. This problem was of special significance in view of the frequent occurrence of gonorrhea and of many cases of incurable blindness.

It was noted that native health was still very unsatisfactory. In October, 1903, 50 natives--mostly older people--fell victim to an epidemic of influenza, frequently complicated by pneumonia. Religious superstitions closely connected with this kind of disease made it extremely difficult for the physician to combat these epidemics. During that year, there were 520 cases requiring medical treatment as against 420 the year before. Of these, 218 were hospital cases. The hospital building was completed and was in use after the beginning of May, 1903. It was built to house 40 patients, but was constantly overcrowded, especially during the last quarter, when there were 100 patients. Conditions at that time were abnormal, as there were many external ailments still dating from the period when no doctor was stationed at Colonia. It was expected that forty beds would be sufficient in normal times.

In 1906 to 1908, a large military hospital was begun, consisting of a clinic and two hospitals. Its size and facilities predestined it to serve as the main hospital of all the districts.

In a report from 1907 to 1909, it was noted that a large number of natives on Palau were vaccinated. Vaccinations had earlier been given on Yap, in the Marianas and in Woleai so that most of the population by that time had profited from this prophylactic measure.

Up to 1912, it was noted that Yap, Saipan, and Angaur had been vaccinated on a large scale (1500 on Yap and 2000 on Saipan). In Yap the best results were obtained, being 100 per cent positive.

Up to 1914 it was noted that from 1909 to 1911, a total of 3,000 persons were vaccinated against smallpox. After the stamping out of a typhoid epidemic which still heavily taxed the staff, the whole population was to be vaccinated.

This summary of certain parts of the reports to the German government undoubtedly suffers from the usual glossing over what must have been an unusually trying situation. It serves nevertheless to give an impression of the conditions of health and disease on Yap from the beginning of German times and even hints of the conditions when the Spanish government was still in control.

Without having the figures showing just what diseases were in what proportions at given times, it is clear that early traders and explorere must have left an aftermath of disease and infection which continued unchecked throughout the Spanish period on Yap. The Germans met this situation with great energy and insight and set about to control the further importation of either venereal diseases or serious epidemics. At the same time, they started a long program of treatment of chronic diseases and an educational program which, over a period of time, would have been an early step toward long-range self-sufficiency. They began an improvement of standards of health and sanitation which might have allowed the islanders to maintain themselves even in the changing conditions which they were beginning to encounter.

Insofar as Japanese medical personnel in Yap are concerned, it is certain that they tried to determine the basic causes for the native depopulation. The study that most clearly points this effort up was one made by a Japanese medical doctor, Fujii (1934). It reflects the basic conclusion of the Japanese that the cause is primarily one of disease and secondarily a matter of social conditions.

This material was in Japanese and was translated and condensed under the direction of Dr. Donald Pletch, by his Japanese staff who are thoroughly familiar with translating Japanese scientific documents of all kinds. A great deal of irrelevant material has been omitted. The English text of the report follows here.

## Investigations of Endemic Diseases in the Caroline Islands

Collection of Medical Essays, Vol. III
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1. Report of the investigations on the decrease in the native population of Yap Island. By Tamotsu Fujii (Yap Hospital): 1-3.

The cause of the decrease in the Yap population has long been discussed since the time of supervision by Spain and Germany.

Though it has been said that the vegetable diet of the people has made them susceptible to dysentery and other internal diseases and that unavoidable consanguineous marriage may have lowered their constitutional vitality, the prevalence of TB and VD are assumed to play rather predominant roles in the problem, according to the author's conjecture.

The medical examination of all inhabitants is therefore thought to be a matter of importance. Yap Island had a population of 3,996 (1930). As the yearly mortality was 181 ( an average from 1917 to 1929) and the birth rate was 67, the population may diminish about 114 in a year and all inhabitants would have supposedly disappeared within 27 years.

2. Report of the medical examinations concerning the decrease in the native population of Yap Island, by Tamotsu Fujii,

From a population of 3,996, 3,556 underwent a medical examination.

440 emigrants who were absent during the examination were assumed to have no disease.

2,465 persons were found to be diseased and only 30.7 per cent proved to be healthy. (If the emigrants are added to the healthy members, 38.4 per cent of the total may be considered sound).

Among 2,465 patients 508 had TB (including 192 pulmonary TB, 60 bone caries, 20 peritoneal TB etc.)

Swollen lymphatic glands of the neck were seen in 432, most of which were assumed to be of TB origin.

Other prevalent diseases are as follows: 161 trachomas, 39 leprosies, 16 syphilis, 277 chronic bronchitis, 63 gastro-intestinal catarrhs, 135 neuralgias, 85 favus, 88 vitiligos and 137 with swelling of inguinal lymphatic glands.

Among 215 deaths in 1929,
96 died from pulmonary TB
15 died from dyspepsia (acute enteritis of infants)
13 died from gastrointestinal catarrh
14 died from peritoneal TB
26 died from uncertain causes

3. Investigations on the cause of decrease in the population and the high mortality rate in Yap Island, by T. Fujii.

(1) Introduction: In "Circumstances in Yap" by Salesius (1902, in German), Friedrichsen pointed out two important causes of decrease in the native population: namely, dysentery and consanguineous marriage. The former was widespread as the people subsist chiefly upon raw vegetables, and the long established kinship marriages may have resulted in general weakness of all body organs, he explained.

Dr. Fresel once made a report on the death rate of newborns and adults. At the time of German supervision, the medical examination was limited only to those patients who came to the clinic. To disclose the real situation of the matter, however, the extensive medical inspection of all inhabitants will be necessary.

(2) The method of medical examination: to determine what sorts of diseases are most prevalent in the Yap population, thorough inspections were intended on all inhabitants without exception. All patients suspected of pulmonary TB were examined for the presence of bacilli in the sputum, and diarrhoea patients were checked for parasites eggs and dysenteric ameba. Tests of urine and measurement of body temperature were not omitted, when they were considered to be necessary.

(3) Results of the general inspection: 1,091 out of 3,787 were recognized as healthy. If 209, who were absent at that time were all healthy, 1,300 were deemed to have no disease.

Out of 2,696 patients, 508 were diagnosed as tuberculosis (192 pulmonary, 216 lymphadenitis, 40 vertebral caries, 33 bone and joint caries, 20 peritonitis and 7 intestinal TB). In all pulmonary TB, the presence of bacilli in the sputum was confirmed. 277 were diagnosed as chronic bronchitis.

In addition to them there were 39 leprosies and 158 frambesias. There were very few who have no anamnesis of frambesia except children.

(4) Patients in the polyclinic:

| Jan. to Dec. | Diseases of the respiratory system | Including |
|---|---|---|
| 1928 | 571 | 19 TB |
| 1929 | 760 | 334 " |
| 1930 | 1,133 | 462 " |

| | Enteritis of Children | Dyspepsia |
|---|---|---|
| 1928 | 153 | 166 |
| 1929 | 193 | 217 |
| 1930 | 201 | 332 |

(5) Statistics of the mortality and new borns in Yap Island. The average annual mortality from 1916 to 1929 was 181 persons, while there newborns averaged only 67. In 1930, there were 167 deaths and 59 births.

(6) Report by Dr. Fresel in 1902 (omitted).

(7) Death rate in 1929 and 1930.

| | | -Causes of Death- | | |
|---|---|---|---|---|
| | Total Deaths | Pulm. TB. | Dyspepsia | Chronic Bronchitis |
| 1929 | 215 | 96 | 15 | 4 |
| 1930 | 167 | 80 | 14 | 30 |

(8) Autopsy findings: Out of 9 autopsies, 1 is confirmed to have died from dysentery. In most of them there were seen changes of cirrhotic phthisis in the lungs and the formation of caverns in a few of them.

(9) Habits of the population:

The native inhabitants contract bad habits which may occasionally cause diseases.

They tend to like half decayed fishes; they cool their bodies in the sea water when they feel feverish and hot, and they nurse sucklings on coconut milk.

Dead bodies are buried after remaining several days in their homes. It is, of course, undesirable from the standpoint of infectious disease prevention.

(10) Summary:

From the observations for 2 years there were found no bacillery dysentery but a few amebic ones, contrary to the report of Salesius.

Prevalence of syphilis and gonorrhoeas may have not been the immediate cause of deaths. As the cause of high mortality the tuberculosis diseases come into primary consideration.

(11) Conclusion: Chief causes of death:
a. Tuberculous diseases and chronic bronchitis, which may have been caused by TB.
b. Dyspepsia of infants.

4. Report of the investigations of venereal diseases in Yap aboriginal race. By T. Fujii, S. Aikawa and S. Yoshida.

Though it was a matter of extreme difficulty to force the general inspection of the sexual organs of all inhabitants, there was no other way to determine the prevalence of VD among them.

Repeating many times the reason, why their birth rate had been lowered to such an extent, brought most of them into compliance.

In diagnosis of VD the microscopical examination was never omitted.

Out of 3,081 whole inhabitants (1,727 males and 1,354 females), invalids, males over 60 years, females over 50 years and children under 8 years were excluded from the examination.

In addition to them, there were 200 emigrants and 127 absentees from various events, who couldn't be included in the examination.

Out of 2,354 examined, 784 were diagnosed as VD (33.3 per cent, almost the same rate as in the case of inspection of Japanese prostitutes.) It is noteworthy that most patients were gonorrhea, while very few indurated chancrea and chancroids were to be seen. The rate of patients in males and females is 35 to 65.

Notwithstanding that 97 per cent of Yap women over 20 years are married, 30 per cent of them were confirmed to be sterile over 5 years after marriage. The rate of barrenesses is 3 times larger than other nations.

Their average number of conceptions is 2.5 and the frequency of abortions amounted to 5.9 per cent. It is suggested, therefore, that the cause of sterility might have resulted from gonorrhea, as 43 per cent of them have gonorrheal endometritis and vaginitis.

Another cause of barreness (f.i. the abnormal position of uterus) was rarely met with. Gonorrheal epididymitis, prostatitis and urethritis in males (46.8 per cent) might have also contributed much to the result.

Illicit intercourse among them should have favored the widespreading of this disease.

5. Countermeasures against the prevalent veneral diseases in the aboriginal (Kanska) race, by T. Fujii.

In the late inspection 312 out of 1,252 males and 472 out of 1,102 females were diagnosed as gonorrhea and most of them were in the chronic state. It caused in many cases epididymitis, prostatitis and the stricture of spermal duct and urethra, which may result finally in aspermia. In females there were soon salpingitis and ovaritis which became decisive causes of sterility.

The treatment of these chronic gonorrhea cases is a matter of extreme difficulty, especially in persons with such a vulgar hygienic culture as the Kanska race. Hygienic education should have a foremost place to begin with. Each disease may need at least 2 months for the cure though the restitutio ad integrum is unattainable.

Shortage of funds for medicaments was also a serious drawback for attainment of the purpose, but it might be conquered by pushing on step by step.

6. Report of the investigation on the low birth rate of the Yap native (Kanska) race, by T. Fujii.

(1) Introduction: Though it is almost clear that the poor birth rate of the Kanska race results from the prevalence of gonorrhea and not from syphilis, there may be still other causes which must be taken into consideration. As to their sexual behavior and the mode of sexual intercourse, further studies will be needed. Whether they are using any method of contraception or whether they are committing self-abuse incessantly will also be the object of inquiry.

(2) Malformation and other diseases of the sexual organs.

In males: 4 phimosis, 1 hyposedia, 1 hydrocele, 13 unrethitis caused by coli bacilli and 1 tuberculous epididymitis.

In females: 3 deformities, 11 retroflexion of the uterus, 1 uterus myom, 20 cystourethritic and 13 endometritis and coli bacilli and 2 ovarial cystomes.

(3) Constitutional diseases which may lower the generative power.

TB and leprosy have been mentioned above already.

Pertaining to infectious diseases, only 3 amebic dysentery (no bacillary one) were seen at that time.

All inhabitants except 28 (under 5 years of age) had the anamnesis of frembesis. It was considered, however, to have little to do with the birth rate. There were found immense numbers of intestinal parasites: ascaris (33.16 per cent) ankylostoma (50.33 per cent) trichostrongyis (98.91 per cent) and oxyuris (3.17 per cent). This prevalence was thought to have been derived from using foul water without cooking.

(4) The spirit of the class distinction among native peoples and how it narrows the circle of wedding and leads to kinship marriage.

They are firmly established in their prejudices of class distinction beyond measures. Tamilingái (low class people) could not be united with higher ones. The frequency of abortions and monstrous children may be considered as the result of kinship marriages.

One case each of acrania, hare lip, oligo or polydactylia, congenital deafness and color blindness was observed.

(5) Habits of natives supposed to have some influence on their conceptivity: During menstruation native females allow a dirty sponge mass to remain in the vagina, without changing it.

The first sexual intercourse is usually begun shortly after the occurrence of the first menses at about 12 years of age. Native females have a habit of bathing in the sea when they are

sick and also shortly after copulation. The chance of conception may have been reduced considerably by it.

They have a low standard of virtue and they commit adultery even with members of their own family. Too long nursing and the habit of allowing young pigs to suck the breasts may result in atrophy of the uterus.

Selfabuse is already begun in their 5th to 6th years and becomes more frequent with age. Aided by sexual play among children it may hinder the development of the normal sexual feelings. The frequent masturbations of the females may lead to the diminution of physiological sense in normal intercourses and result at least in cold-heartedness.

As abortive drugs condensed sea water and some plant decoction were used.

(6) The writers view pertaining to the baneful influences of self abuses in both sexes (omitted).

(7) References and discussions concerning the cause of sterility:

30 per cent of the Yap females are sterile (191 out of 622 females in the 26-50 year age group had never experienced pregnancy. The writer attributed the cause of barreness mainly to females, because they could not remain monogamous. The chief cause of sterility was concluded to be gonorrhoic endometritis and salpingitis, while the other diseases of females, as well as a- and oligo-apermia caused by epididymitis in males play a rather subordinate role. The rate of abortions and still births are 82 out of 1417 (5.9 per cent), and the death rate of new borns under one year is 13.3 per cent.

(8) Conclusion:

The degree to which gonorrhoic diseases prevalent in both sexes inhibit conception may be readily deduced from the above-mentioned investigations. In support of this, there are 15 women who became pregnant for the first time after treatment, and there are many with acquired sterility. Furthermore, there are too many bad habits, which may affect their conceptive power. Among chronic diseases TB will result in general weakness and insufficient development of sexual organs, while ankylostomiasis and leprosy may play subordinate roles.

7. Comment on the report (by Dr. Fujii) of the investigation on the low birth rate of the native (Kanska) race, by Kojii Totsuka.

Though there were many valuable reports hitherto issued concerning hygienic problems of the island, the objects of investigation was on the diseases or patients in most of them and the tribe itself has never been taken up.

In studying individuals it is enough to have some expert knowledge. In the investigation of the race en masse, however, not only medical experience but also immeasurable efforts are required. Furthermore, the latter investigation necessitates hard work for a long time, contrary to the former. Therefore, there were few reports that constitute as good a reference for the elevation of the general hygienic state of the tribe and prove helpful in favoring racial prosperity.

Dr. Fujii had fought for several years with great enthusiasm, conquering the severe heat and barbarous surroundings. Research on the cause of a low birth rate is a matter of extreme difficulty in itself. He has almost cleared up the matter, even under such unfavorable conditions, though there still remains some inquiry.

Incomplete references have been unavoidable because of the primitive conditions. They must be completed later by his successors. Anyhow, I want to dedicate words of gratitude for his effort, which may help the measures of Government and also benefit the inhabitants themselves.

8. Countermeasures against the decrease in the population of the Yap native (Kanaka) race, by T. Fujii, S. Aikawa and S. Yoshida.

The treatment of VD was started in 1930. The number of patients in 1932 was 88 (16 males and 72 females), of which 9 were cured. Though 88 out of 784 gonorrhea patients seemed too small a number, it is noteworthy that all of them wanted medical advice of their own accord.

Since April, 1932, as many VD patients as possible were persuaded to undergo medical care. The rate of conception appeared to increase with time.

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This study rather well summarizes what the Japanese did in terms of direct medical investigation of the depopulation problem. One matter which is of crucial importance is whether or not all the venereal disease diagnosed by the Japanese was actually gonorrhea, or some other condition which gave that appearance. The methods for diagnosing this disease are difficult at best. The treatment for gonorrhea at that time were relatively crude, involving prolonged and repeated injections into the bladder for men and intravaginal solutions for women. As the Japanese stated, the cures were very few at the time when the survey was ended. It is not reasonable to suppose that as the next several years went on and war became more and more imminent, that this careful, systematic diagnosis and treatment continued. The question remains as to what happened to these several hundred cases of gonorrhea.

Reports from medical officers stationed on Yap since the American occupation indicate a very low incidence of gonorrhea with no history of extensive cases and cures in the past.

Verbal statements from the various Navy doctors whom we met indicated a disbelief in the possibility that there could be extensive gonorrhea on the island. They had seen only one or two cases in all the time they were there.

One explanation of this phenomenon, however, may be that a Yap man will do almost anything, even to enduring great pain, before exposing his genitalia, and a woman will seldom consent readily to a pelvic examination.

In effect, then, the American doctors knew the Yaps were sensitive about this exposure and tried their very best not to antagonize them nor to destroy the confidence so painfully built up by their predecessors. For this reason, it is conceivable that a great percentage of the population still has gonorrhea and no one knows about it.

Evidence from the few women examined is inconclusive. One of the doctors kept a very careful observational record and reported that there were more cases of an eroded cervix, mucous blocks, and yellow exudate from the cervix than would be encountered in routine American practice. In some cases, he made further microscopic studies. His conclusion was that for some reason, which was not immediately apparent, there was a great deal of chronic irritation of the cervix, but that there was little gonorrhea.

One of the medical officers offered the opinion that the chronic irritation might have resulted from abortions by means of the technique described elsewhere. Another possibility which can be deduced from the ethnographic data is that this condition could be caused by the use of irritating leaves or other objects as tampons during menstruation.

A naval medical captain discussed the enormous percentages of gonorrhea found by the Japanese as contrasted with its virtual absence reported by our doctors. He felt that the situation was quite similar to that on literally dozens of the Japanese controlled islands where high percentages of gonorrhea had been reported. In all these cases, it had later been shown that the percentage of actual cases was small. He dismissed the Japanese findings as based on totally erroneous diagnosis. After he had made an inspection of Yap, he thought that gonorrhea could not have played a very significant part, or it would have left greater numbers of infected natives in American times.

In Japan, an effort was made to locate people who had helped in the various diagnostic procedures, especially a Dr. Nagasaki. Unfortunately, he had been killed in one of the atomic bomb blasts, and all other actual participants had disappeared under various mysterious contexts.

In a later interview with the Dean of the Tokyo Imperial Medical School and his chief expert on venereal diseases, the question of diagnosis and the essentially conflicting information was discussed. They would not commit themselves definitely, but thought that it was easy to be mistaken in the diagnosis of

gonorrhea. They could not give any enlightenment as to the specific diagnostic procedures used in Micronesia.

The question could be solved by a careful survey of a proper sample of the present Yap population. Yap indubitably has a large proportion of barren women, but the etiology of this barrenness may be old chronic gonorrhea or be unknown.

All the medical authorities who have been interviewed on this subject think it is hardly probable that any great number of cases could exist and the people not show symptoms bad enough to be detected in routine medical practice. It is quite impossible to get doctors to be specific on this matter. One reason for their caution is that it depends on too many variables. One chance is that there might be a strain of the disease which would give only chronic mild discomfort throughout life, and which was a special development of the Yap area.

One man's opinion on Japanese medical activities in Yap is that of Willard Price (1936), who visited the island and looked into the subject of depopulation. His material is highly literary and perhaps exaggerates some aspects of the picture, but it is worth summarizing here.

During Price's visit to Yap, he witnessed part of a native funeral ceremony. Afterwards, the chief whom he was visiting said that there were too many houses empty and fields idle, for death was a too frequent visitor to Yap. As the chief put it: a long time ago, only old men died. Now young men die too.

Price then summarizes the facts that the population of the Marquesas had shrunk to one tenth of its former size, and the Solomons to one fourth. The 100,000 inhabitants of the Marianas dwindled to 3,000 in German times, and the Marshallese fell to two-thirds of their former numbers. The two thousand natives on Kusaie before the American whalers arrived dropped to 200 before the end of Spanish times.

Price asks the causes and comments that on many islands the depopulation has been checked. On Yap, he says, the causes are plain. He does not lay the entire blame on the white man. Thus, the white man did not teach the native to drink water which had washed a chief's corpse, nor to plunge a fevered person into cool sea water, nor to heat a chilled man at the open fire.

Native medicines are somewhat effective but are often nullified by magic and superstition. Promiscuity at an early age and abnormal sex practices thereafter make men impotent and women sterile. Habits are irregular, food is bad and water may be infected.

Price asked Dr. Nagasaki, the medical officer on Yap at the time, why he advocated clothing for the islanders. The reply was that in these latitudes, everyone gets enough ultra-violet rays even through light clothing, while the bare skin is much more exposed to skin diseases. On chilly, rainy days one catches cold more easily if unclothed and young children are especially susceptibe.

While Dr. Nagasaki recognized the possible protection of the voluminous women's skirts and their value as seats, he said that they weighed 15 to 16 kilograms when full of water. Nothing at all would be better, but the greatest improvement would come from wearing light cotton skirts.

In addition, the natives chose to live in a dark hole of a house, with little air and light, with the thatch roof a reservoir of water. The floor is a grill of poles on the ground with earth vapors rising through the cracks.

But these practices went back many years, and did not kill the natives off until the white man brought other things. Price said that at that time more than 50 per cent of the deaths were due to tuberculosis brought by the Spaniards. Dr. Nagasaki added that the Japanese then unwittingly spread it to Palau and that the resistance of all the islanders was low.

According to Dr. Nagasaki, the low birth rate was also attributable to the white man, since the inability of women to bear children was due to venereal disease brought in by American whalers and other outsiders.

A German radio operator brought leprosy to Yap forty years earlier, and dysentery reached Palau before Spanish times. A Palau man said that he was alive then, and that they buried five or six people every day until more than half the people on the island died.

Price thought that the Japanese had done much about medical conditions in their Mandated Territory. There were eight government hospitals in the area, with a staff of 25 physicians, seven pharmacists, 23 midwives and nurses and seven assistants. In addition, there were several hundred depots where medical supplies were left in charge of a native.

The hospitals trained as well as treated. They selected intelligent girls from school for a year in the ward, after which they lived in their own villages. The native police tried to report all ailments. Sanitary conditions were enforced with mobilizations of labor to put up concrete installations. Travelling doctors went from village to village with lectures and slides.

Lepers were isolated, as were cases of tuberculosis and educational efforts were very strong in the prevention of the latter. Tuberculosis deaths fell from 20 per thousand to 9 per thousand.

Model houses were built. By 1935, a hundred had been completed, and thirty per year were to be added. Strict health regulations were promulgated in order to make the natives conform to to Japanese health idea, and the Japanese paid half the cost. Progress in making the natives wear clothing had little success, however.

Venereal disease was reduced, but still allegedly affected one-third of the population.

Hospital scouts coached mothers in caring for the newborn so that the baby would not be dried in the wind nor wrapped in a banana leaf. A large bath towel was issued to wrap each infant.

Though an increasing number of women came to the hospital for delivery for free service, many were still held back by tradition or prejudice. Infant mortality was as high as 80 per cent in Spanish times. In 1929 it was down to 39 per cent and in the thirties it fell to 15 per cent.

The remarkable success of salvarsan against spirochete infections helped against the magician. But some natives were still afraid, and there was only one way to bring them in for treatment. That was to tell them that if they refused to come, they would be subject to autopsy after death. This had some good effect because of the natives' fear of the magic involved.

Respect for the hospital increased after a fee was charged for treatment, but the cost was small enough so that no one suffered. Those who could not pay were treated free. Of a 35,000 yen cost of the hospital, only 3,000 yen came from the natives.

All these statements render improbable the idea that the Japanese were trying to wipe out the natives. The population decline was lowered yearly from 200 per year during the Spanish times to 60 in 1931, 55 in 1932 and 61 in 1934. The doctor believed that the decline would soon be checked and that thenceforth there might be a gradual increase. It is always necessary to realize that a balance must be struck, and that an increase to an overpopulated state would in many ways be as bad as a continued decline.

Nature attained a sort of balance in other islands of the Japanese Mandate, and Yap was the only important island where the decline continued. The slump of the Marianas from 100,000 to 3,000 was checked in German times, and since then a slight increase has taken place. The Carolines, including Yap, have marked time, varying from 1900 to 1935 in the neighborhood of 35,000 people. The Marshalls move about the figure of 10,000. The total population of Micronesia has varied around 50,000 since the beginning of the Japanese occupation. Price credits Japanese scientists with trying to do their best for the natives.

The American surveys of native health and depopulation have been less extensive, and recent enough so that eyewitness accounts are possible. The most intensive medical survey of Yap until now has been an analysis of worm infestation.

This study, like the similar work of the Japanese, showed that nearly all the natives harbor intestinal parasites. The American data show that about 97 per cent of the population had two or more species of worms, including hookworm (Ankylostoma). The meaning of this finding was not entirely clear to the doctors involved. They thought that it might be connected with the

chronic back and belly aches that so plagued the female population, and which so eluded accurate diagnosis. Medical texts on the subject state that worms may lead in some cases to impotence in men or sterility in women, but the prevalence of similar infestations in our southern states and in many overpopulated islands of the West Indies make it an unlikely basis for Yap depopulation.

This worm infestation is evidently chronic, since almost 100 per cent of cases were reinfected within three weeks of having been declared free of worms after crystoid treatment. Conditions of securing and storing drinking water, dirty utensils, a lack of shoes, and defecating in the bush or on the beach made this reinfection almost inevitable.

Token measures were taken to encourage the building of latrines and to educate the natives in the principles of germ theory, but the success of these efforts was slight. A sanitary inspector was designated from among the enlisted men. His duty was to improve the sanitation of the Yap villages. His periodic trips were of some possible value, but since his prestige was rather low in native eyes, the people would continue more or less as they had been doing for years. They were sure that when he was transferred, the new sanitary inspector would have to learn all over again. In this manner, all the suggested inconvenient changes could be postponed indefinitely by careful handling.

Sprayers and DDT were given away so that most families had this rudimentary equipment. It is difficult to understand why most people were either out of the mixture or had a non-functional sprayer, in view of the fact that the natives valued protection against flies and mosquitoes.

Water purifying substances were available, but seldom used. Although cots, mosquito nets and sheets were not generally distributed, these items were in fair supply as a result of warehouse destruction in typhoons, theft or purchase.

The naval medical setup proper consisted of a small hospital with two doctors and a pharmacist's mate, plus various other enlisted corpsmen. Native attendants were generally available in numbers from three to five of both sexes, together with several trainees from the outer islands. A White Russian girl was considered to be the most valuable nurse.

Equipment was standard Navy issue. It was theoretically enough for most hospital procedures, as one doctor put it. In actuality it was impossible to do most of the things that would normally be thought of as good medical practice. No attempt was made to conceal this fact, and it was a source of deep regret to the medical staff involved. This feeling of disappointment stemmed from several causes.

The first is the mental attitude that overtakes a bright young doctor fresh out of school. He has been used to the best in equipment, and has been taught that not getting a long and complete history of the patient is virtually malpractice.

At the little hospital on Yap there were many times when running water was not available, there are no skilled technicians, nor helpers. These obstacles were cheerfully met, but the problem of not being able to get even the semblance of a case history was the deadly factor.

What eventually happened was that the doctor would look at each case about once or work with some particular patient whose history was not important, and allow the multiple cases of mysterious internal ailments to be treated by a corpsman who routinely doled out vitamins, calcium, etc.

To remedy this situation partially, naval personnel at one time were ordered to learn the native language, and at the same time give English lessons to their native trainees. This actually was a discouraging experience, especially so when the Americans would be transferred in a few months.

Another predicament which led to incomplete medical attention was the paper work and explanations necessary if a patient died under exploratory surgery. Over a period of time, many cases came up where diagnosis depended on surgery. The simplest thing is to wait until the patient dies. The death is then reported by a native, and is then recorded as something like heart disease or other vague description. It was sometimes felt that since a regular Navy life with promotions was not the goal of many of the medical officers, the safe thing to do was to follow precedent and emerge with a good mediocre record.

The third factor to be considered hinged on the effect of a surgical death on the slowly and painfully developed native confidence in American medicine. A more calloused, headstrong person might have made a few more accurate diagnoses and spectacular cures, but he could have driven away all the consumers. The successful practice of medicine and proper deference for native customs and feelings form a combination that has not yet been achieved. The Japanese emphasized good medicine at the expense of custom. We have done the reverse. Both methods deserve a fair trial before judgment is passed.

The net result of American medical activity has been that while impressive charts of diseases could be tabulated and turned in to higher authorities, the actual amount of sickness and disease in Yap, and the causes of almost all of the deaths, were neither well known nor recorded. The periodic reports are all virtually the same in form and in a general sense of well being.

Among the projects which have been tried on Yap may be included a tuberculosis testing campaign which was begun with X-rays in 1948, and a medical survey of the various districts of Yap.

This survey was an attempt to gain access to a representative sample of sick natives. All dealings were through the native hierarchy of power so that confidence could be built up slowly in American medicine. At the same time, an effort was made not to be aggressive in the search for patients. Meetings were held where cases might be spotted for transfer to the hospital, and lectures on hygiene given. No treatment was to be done in the districts.

This survey was tried, but with limited success. The natives were puzzled and worried that we were becoming aggressive. They wondered if the next thing would be forced physical examinations and autopsies. The doctor was generally greeted at the pier by several important men and led to the spot selected for the clinic and lectures. After the patients arrived and had been examined the doctor was led about and expected to make comments on whether conditions were good or bad. The natives made a token or courtesy attempt to please us by presenting some patients, but felt that the whole affair was probably not worth while.

This phase of the survey is less idealized and much more realistic than the reports of either the German or Japanese government officials on medicine in Yap. If someone had been on the spot during these other administrations, much the same variations of reality from reporting would have been encountered.

In spite of any failure to follow through in the most perfect manner, the number of patients coming to the hospital in Colonia has increased. The increasing number of women and children indicates that the shrewd natives are accepting their new neighbors more every day. A part of the "revolution" in their lives which is most acceptable to them is their adaptation to Western medicine.

The facilities in Colonia are not readily available to all the people, however. Under conditions of wind, storm and tide which are not infrequent, the hospital is a full day or better away. Most of the first aid stations in the districts are manned by native health aides who in 1948 were too little trained to be of much help.

On the positive side, however, our naval doctors have one remarkable achievement to their credit. This tribute to American medical skill lies in the field of obstetrics. For months on end, babies were born without a single fatality to mother or child. And the conditions under which the doctors had to work made the old-fashioned country doctor's job seem like that of a well-equipped specialist. In one case, the woman would not move from the chicken coop by the hospital until she was ready to deliver. Thereupon she bore twins on the spot. Other women would not remove their skirts. The doctors could never shave the pubic region nor even wash it adequately. Only under life and death necessity would they insert an instrument into the vagina because the surrounding field was not sterile.

Yet the doctors succeeded, and by yielding to these odd customs and trying conditions, gained a constantly enlarging clientele of prospective mothers. Some women even came in toward the last for prenatal checkups, and others would live for weeks in the little native-supported houses nearby.

If we are to summarize the historical picture of Yap medicine, it appears that the island probably suffered from the usual epidemics, increases in chronic ailments, and experienced a great increase in the death rate following the introduction of foreign diseases. The history of medical accomplishments by the Germans, Japanese and Americans is one of gradually gaining the confidence of the majority of the people, and gradually alleviating the

worst effects of these diseases. Mass immunization and quarantimes were an attempt to exclude other diseases and prevent epidemics. Since the present condition of Yap is such that no rapid population decline is likely in the near future, the natives have much to learn and much to gain from better medical facilities.

## B. Sexual Behavior

The size of the native population of Yap can be compared to the level of a lake, with the births as substantially all of the incoming water and deaths and emigration as the outflow. Many things can affect the rate of input or births, but its highest limits will be determined by the capacity of the people to reproduce, and by the frequency, timing and nature of their sexual intercourse. It is therefore reasonable to begin this discussion of population input by dealing with some pertinent evidence on coitus rates and human fertility. On this basis, it will be possible to describe the sexual sentiments and experiences, and the frequency of copulation among the Yap people. Factors other than coital occurrences enter the picture when we come to consider contraception and abortions later on.

Recent findings on the number of copulations per pregnancy in civilized Americans, at least, indicate that this number is higher than was once thought to be the case. The material on this subject has been brought together and analyzed by Raymond Pearl (1940).

In Pearl's own investigation, there were 199 white females, married, not sterile, using no means on contraception, having fairly constant sexual habits, truthfully reporting pregnancies and births, and with the information in many cases verified by the husbands. Socio-economic conditions were average. The age range was from 15 through 49 years. The median age was 36.8 years. Total and net potentially effective coitus were differentiated by eliminating the coitus during pregnancy, when further pregnancy was of course impossible. It was recognized also that only about a third of the total menstrual cycle or less was a time of potential fertility.

The results which are significant here are noted in the following table.

Table 1

Effectiveness of Copulation in Human Pregnancies

| Age of Woman | Net Potential Effective Copulations per Pregnancy | Average number of Pregnancies per Couple |
|---|---|---|
| Under 20 | 176 | 1.4 |
| 20 to 29 | 202 | 3.3 |
| 30 to 39 | 290 | 2.4 |
| 40 to 49 | 1,434 | 0.4 |

In an attempt to show that the sample was adequate and representative, Pearl investigated two further questions: whether this sample of 199 couples showed an abnormally high rate of coitus per unit of time as compared with couples generally; and whether these couples have abnormally low pregnancy rates per time unit of opportunity for conception (say the pregnancy rate per 100 years of exposure risk).

Considering this first question, he calculates the mean and median numbers of copulations per month. This results in a mean of 10.54± .36 and a median of 9.50± .44 times per month.

Pearl compares this result with those of several other independent investigations of a similar nature and finds that his rates are either not statistically significantly different, or that they are lower. The conclusion is that these couples show no evidence of abnormally high coitus rates per month.

The couples showed a wide variation in the number of months married, the average time being over 16 years. This shows that there is no skewing due to the exuberance and stimulus of recent marriage. In addition, the surprisingly long married time of 3,220.07 years is reached in total. It was further concluded that this group was not abnormal in the age at which they married.

The analysis of pregnancy rates per hundred years of opportunity to become pregnant showed that 28.6 per cent of the women experienced pregnancies at a rate of between one every two years and one every single year. About one-fourth (25.7 per cent) experienced pregnancies more often than once a year, and finally, that 45.7 per cent became pregnant less often than once in two years. In general, the mean pregnancy rate tended to decline with increasing duration of marriage.

The mean pregnancy rate per hundred years of exposure is thus 76.8= 3.7, and is in close agreement with other independent samples in this respect. The conclusion is that these couples were not characterized by an abnormally low fertility.

Pearl concludes that these findings provide an approximate estimate of the average group risk of pregnancy in human beings where the couples are fertile, do nothing to diminish the risk, and are motivated in their sex behavior solely by libido, habit, and the desire for children.

With these findings in mind, it is well to consider the earlier writings on the sexual practices of the Yap people. In general, this literature would have us believe that these natives were among the most immoral group on earth. The Germans mention their extreme looseness, and the Japanese wrote of them as being utterly promiscuous and laden with venereal disease.

Some of the earlier authors intimated that the mispil or "hostesses" in the young men's club houses depleted the sexual energy of Yap husbands to such an extent that their wives were denied the privileges of the marriage bond. That is to say, the mispil was theoretically impregnated time after time on a statistical basis, while the wives remained childless.

This theory is rendered improbable by the fact that although the Germans first limited the number of mispil on Yap and then abolished them, the depopulation continued as before.

It is easy for the foreigner to be misled about the sex lives of the Yap people. As soon as we got the least bit acquainted with some of the local young men in one district, it was apparent that about half their conversation when in groups or in a joking mood dealt with teasing some boy about his sexual relations with some girl. This all seemed to fit until it became evident that the boy involved was not going off to a girl at night, but was with other male friends. Again, in the context of a drunken party, another man who had said that he had so many girls because his "line" was so good, gave himself away as having had no sexual intercourse for years because he was undertaking such big work.

There were some indications of homosexual behavior, but subsequent observations indicate that there are wide latitudes for permissive touching and speaking of a kind not acceptable in our culture. The boys involved were not completely deviant, even though there were strong overt indications in that direction.

Another man, from Tomil, gave a very significant account of certain phases of his sex life with regard to relative rates of coitus and Yap ideas about them. He refuses to have sexual intercourse more than twice a month and prefers once. He and his wife talked the matter over before marriage. He told her that he was weak and sickly and would not want to have frequent intercourse. When she occasionally wants to do it more often now, he reminds her of this talk and refuses to cooperate. The real test came when they were first married and copulated seven or nine times in a short while. He became so sick and tired that he could hardly move, felt so sick that he was afraid of dying, and swore that he would never again violate his rule of abstinence. He considers himself to be unusually sick and weak. Other men may be stronger and have intercourse much more often. On the other hand, there are many men as weak as he is (he said), who cause a lot of trouble with their wives when the women pester them for intercourse, and the stronger men come around trying to have affairs with these women.

This informant thinks that a Yap man and woman cannot expect to have one spouse exclusively. A person gets to know several other persons other than his mate before and after marriage, and if they meet later they can get together. But this does not keep the spouse from getting very jealous.

At one time we wondered whether the reason for all the emphasis on frequent intercourse and talk about such matters was a Yap device for trying to appear more normal to us as newly-arrived Americans. The natives thought that Americans were interested in sexual matters above all else. In discussing this subject with one young man, a surprising validation came. He said that his idea of Yap custom was to have intercourse several times during one week of a month, usually skipping the rest of the month. If the rest of the month is not skipped, a wait of at least ten days is best.

As an experiment, this informant was instructed to mark any preferred time or sequence for intercourse on a diagram showing several menstrual periods separating the intervening months.

He said that the Japanese had told the Yap people to have intercourse in the week just following or just preceding menstruation and then they would have more babies. Since this is exactly contrary to generally accepted medical literature on the subject, it raises interesting speculations as to the motivations of the Japanese. The Japanese had dinned it into the natives' years that excessive intercourse and general promiscuity were the basic reasons for a shortage of babies on Yap.

This informant could not say whether the strictures against excessive coitus were old Yap ideas, but he considered them sound advice. The reason was that frequent coitus would make a man weak, and when some men got together to work, anyone who could not do his share and who panted and shook would be teased or chastised for having too much to do with women.

As to the supposed extreme promiscuity of girls below menstrual age, this informant thought that such a thing was nonsense. It is actually rare for a girl immediately above menstrual age to have intercourse. Most boys will begin this activity at about the age of eighteen, but again it follows a peculiar pattern: That is, not over one copulation every two or three months because too much coitus would make them weak and other young men would notice it.

The informant felt that most women have one or at most two lovers at a time, and consequently do not have relations much oftener themselves. A woman who wants more frequent intercourse cannot express this desire by any means without losing all respect from the man. (His voice and facial expression showed general distaste and almost horror at such a thing.)

He felt that Yap men could never possibly get drunk in a group withwomen and have a sexual orgy. If, after a party where men are drinking, any one of them wants to look up a woman, he must leave and operate alone. Even if two boys meet a girl on a path, they would have to refrain from sexual references and wait until they were alone.

As to the constant teasing and horseplay about sex around Americans whom they know well, this informant felt that it is mainly for the foreigners' benefit.

Another man, married and about thirty years old, told about the Japanese book that was lent to Yap young men by the large Japanese trading company (Nantak) which was on Yap. This book advocated having intercourse only one night per month, but as many times as one wished. This informant says that he followed this advice for awhile, on one night just before the menstrual period. If he did it more often, it made his head feel like water and he could not think or learn anything. When a man is younger--perhaps under the age of twenty-five--perhaps he can do it oftener, but after that, just about once a month is enough. If any work of importance were to be done, a man would not dare to endanger his efficiency by having intercourse. The informant mentioned that there is always a white secretion which comes from a woman immediately before and after the menses, and it is very disgusting to see or smell.

Several other people had seen this book, and there had even been lessons from Japanese medical people to both men and women, using anatomical models and concentrating on how to have children. They apparently emphasized repeatedly that promiscuity of women was one of the basic causes for sterility.

This extreme promiscuity of women as a factor in their childlessness seemed prominent in the mind of another man in his thirties who was quite a responsible member of the community and could be expected to give an honest opinion. He thought also that part of the answer lay in the fact that Yap people breed mainly among themselves. As additional proof, he cited the cases where the wife had come from Saipan or Woleai and had borne large numbers of children.

This man also mentioned that in the old days the Germans came, and when the people worked on boats, they brought back all sorts of diseases, especially tuberculosis. Other people got sick all the time from eating foreign food (that is, vague aches and pains which cannot be diagnosed accurately and which may possibly result from worms.) These native seamen also brought in syphilis and gonorrhea, which are practically gone now, he thinks. Women with gonorrhea could not have children.

This man felt that the real reason why Yap women have no babies is that they sleep with too many men. If a man, too, sleeps around too much, his intercourse will not impregnate. If a man and woman are married, however, and just have each other, then babies will usually be born, and it doesn't matter whether there is little or much intercourse. The informant denied any knowledge of any manner of contraception, and said that a woman could get rid of an unwanted child by taking an abortifacient medicine by mouth which she could get from an old woman.

The Japanese told the natives that sleeping with many other people was the basic cause for no babies. This informant does not advocate intermarriage between the landlord and serf castes because it was against Yap custom and would prevent the people from having healthy babies.

Even natives who consider themselves ladies' men have a relatively low frequency of contact with women other than their wives. These relationships involve an extreme amount of planning and trouble. Data on one man's extramarital love life can be extracted from his diary over a period of months.

This individual was married, but wanted to have illicit relations with a girl who had just had her first menstruation. In the native terminology, she had just become a <u>rugod</u>. She had just left school on this account, and was living in Kanif. The man sent her a note through a little girl (<u>buliel</u>) who was the daughter of one of his friends. The <u>rugod</u> had been one of the man's pupils in a Yap school before she first menstruated. The note stated that he was in love with her and wanted to meet her, and that she should send back a message saying whether she would meet him and where. The reply came back by the same messenger and expressed a willingness to see him, but that she

was afraid of his wife. He sent another note reassuring her that there would be no trouble, since they would meet secretly and his feelings would be concealed from his wife. After three days, as agreed, she came to meet him close to Colonia. After talking for about ten minutes in a very casual manner, they decided to meet in a vacant house in another village after three more days.

They stayed in this house for one night, mostly talking. He held her and kissed her some. There were two more nights like this. Since she was a virgin, she had a lot of pain at their first intercourse and made grunting and whining noises. She claimed to feel pain clear up into her chest and in the legs as well as in her vagina, and blood got all over everything. She did not want to copulate a second time, but he made her, and the pain was not so great this time. The first time, he had wet the head of his penis with saliva and it was just like trying to push it into something very hard. The style of coitus was American, since it was not feasible to perform gichigich (form of intercourse explained next chapter) in the Yap style when the vagina was so tight anyway. They then decided to meet two weeks later, and at that time did it a couple of times more. This time she had no pain.

The next time they met was about five weeks later, when they talked and arranged to meet the next noon back of the school. At that time, they had intercourse twice, and later that night went on over to the other village to remain all night in the old house, having intercourse once more.

She did not drink tuba at any time, and he considered her a very good girl for this reason. Whenever they met casually, he would give her some tinned beef or some cigarettes. On one of the occasions mentioned, he gave her five dollars which she did not even ask for. (In Yap, a nice girl under these circumstances never would.)

During the course of this affair, the writer of this diary did not have intercourse with his wife more than once. One reason was that she was too old (twenty-six), and partly because it would prevent her from working in the sweet potato and taro patches for magical reasons, and also because it would make her too lazy. The girl he was seeing on the sly, however, could not be expected to work--it was her legitimate play time.

The fourth time he saw this girl was in October on the day when all the people assembled for a spelling bee at the school. That night, the two of them slept together in the Kanif sick house close to the dispensary. The girl's mother was in the other room getting ready to go to the hospital the next day, but she did not care if they were together.

As it happened, he came to the house to talk to her mother. After awhile, the girl said to her mother that she should go into the other room to sleep. The mother pretended to get very angry and said that the girl was a fool, knowing all the time that he had brought some beef, soap and cigarettes. Actually, it was quite permissible for a girl to tell her mother that she is seeing such and such a boy, but this type of rendezvous is

strictly low grade, and he became contemptuous of her.

The next time he saw this girl was after Christmas at the dapal (menstrual area) in Kanif. He went over to see her mother and was told that he could not meet her because she was in the dapal for her menstrual period. He asked the mother if the girl were alone in the dapal, and the mother said yes. Then he sat around a bit, finally saying that he would go on home. When he got out of sight, however, he sneaked over to the dapal, where he spent the night with the girl in one of the little menstrual houses. They did not have intercourse, because, as he put it, when you go up and down the menstrual smell comes up to your nose and you vomit. He speculated that in America it does not matter because one can put on plenty of perfume and never mind the smell. With him, this did not work because if he smelled and felt it was dirty his feeling would not be strong and neither would his penis. Besides, there was no mosquito net in the hut and he could not concentrate, but he stayed because he had come such a long way.

The next time he met this girl was over a month later when she came to Colonia on Saturday so as to attend Mass the next day with her parents. They met and went out on the hill in back, but did not have intercourse. He gave her some betel, cigarettes, and two dollars.

That was the last time recorded in the diary, and the pair had not met again for two months. She sent word that when he wanted to see her, he should send a message, and she would come in on Saturday night again.

During this affair, lasting eight to ten months, the diarist did not have intercourse with his wife more than four or five times, and has had no other woman on the string as far as sexual matters are concerned. He does not want a child by his wife now, but when he does, his wife will go to his mother and have her tell just what to do in the way of magic or medicine.

The foregoing extract is part of a very accurate record kept in Japanese writing, with entries made with great regularity and not at all dependent on vague memory nor subject to distortion to fit the occasion.

In one district of Yap, a small poll or survey of sexual behavior was carried out with sixteen respondents. These individuals were not chosen for reliability or representativeness, but for expediency. The findings here can be conveniently tabulated. Of the sixteen, fourteen had not had intercourse in the previous week, and two had. The earlier coital experience of the fourteen recent abstainers is shown in the following table.

Table 2

Previous Coital Experience of
Fourteen Abstainers from Coitus for One Week

| | No | Yes | Not Asked |
|---|---|---|---|
| Coitus in the preceding 10 to 15 days | 12 | 2 | 0 |
| Coitus in the preceding 1 to 8 months | 5 | 8 | 1 |
| Coitus in the preceding year | 2 | 12 | 0 |
| Coitus during lifetime | 1 | 12 | 0 |

The reasons given by these fourteen abstainers for no coitus during the previous week are shown below.

Table 3

Reasons Given by Fourteen
Abstainers from Coitus for One Week

| | | | |
|---|---|---|---|
| No reason | 4 | Mourning for dead grandfather | 1 |
| Pregnant wife | 2 | No desirable woman available | 1 |
| Magic making | 2 | Fishing | 1 |
| Canoe building | 2 | Recent return from sea voyage | 1 |

The attempt to estimate the average weekly rate of copulation was unsatisfactory. The wide variance in reliability rendered any figures obtained too highly suspect for use here.

It is interesting to note that although the reasons for abstinence here are mainly rationalized in terms of formal taboos, many of the respondents expressed the fear of becoming weak and of being ridiculed if they did not function properly. One man said that although he wanted a woman oftener, he abstained because intercourse more than once a week would be harmful.

Another man said that even though his wife might want to have intercourse oftener, he would not comply, and if necessary would go over to the men's house to sleep.

Another said that if he sees a woman, he wants to go to her, but if he has intercourse three or four times it is bad. Once a week is all that he will ever do. One week, he did it twice, and one week five times, but the next week he stayed drunk all week and doesn't remember at all. He says he was very tired. The old men say that it is bad, and a person will not be strong inside and unable to do hard work. The informant said that he agreed with this idea. He knew that other people had intercourse seven or eight times a week, and they get feeble quickly. Women also get weak, but not as fast as men do.

It is obvious that the Yap people experience a general anxiety over frequent copulation. Although this survey was small, it was not in any hand-picked to show a trend. It could not be extended beyond a certain group with which the ethnographer had good rapport, however, if the results were to be at all reliable.

In spite of the fact that the connection of intercourse and reproduction is familiar to the natives, the aboriginal belief was that coitus had nothing to do with getting pregnant. Even today, there is enough confusion in this matter to deserve a few paragraphs. The older people especially are skeptical about the role of coitus, and even the educated and Japanized natives feel some conflict over it.

Older people reason as follows on coitus and pregnancy: some women have intercourse and do not get pregnant, while others do. In addition, the case of a virgin was cited, but the details and gossip on the matter had to be kept quiet because the child's not having a father was very rude and unmentionable.

The analogies to pigs and other animals were countered by the argument that pigs were animals and not human beings. The human means of reproduction is through patrilineal spirits which watch out for the welfare of their living relatives. If these spirits are happy, then one of them will intercede with the spirit which presides over the menstrual area and over the female functions which are associated with that area. This spirit will make the menstrual fluids congeal in a particular woman and she will become pregnant.

This theory is fitted to the system of double descent, since it neglects neither the mother's nor the father's place in the genesis of the child. A woman alone can have a baby, with her patrilineal spirits acting on her behalf, but this is somewhat unusual and a little abnormal. She may also try magically to persuade her spirits to act. Ordinarily, however, it is the spirits of the husband which prevail on the mother's spirit in charge of this matter.

Should the husband's patrilineal spirits fail to cooperate, the pregnancy cannot ordinarily take place, since patrilineal spirits are the functional equivalent of coitus. This belief in the efficacy of the spirits of the husband's lineage is the equivalent of the belief in the biological efficacy of coitus for validating the husband's share in the genesis of the child.

When informants were asked how a child was actually made, the matter of a woman's fluids came up. The reason why a <u>buliel</u> (little girl) could not have a child was because she had no milk (like semen). Later on, however, when she had passed her first menstruation and become a <u>rugod</u>, she would have this fluid, whose name, like that of semen, is <u>f'ud</u>. The woman's fluid is like semen but more watery. Her fluid flows when she has an orgasm, and without this orgasm there can be no child. This orgasm is supposed to be twice as good as a man's, and lasts twice as long to make up for the future pains of childbirth.

This last version of reproductive physiology obviously is based on different premises, and it is not known whether it is an innovation forced on the natives in recent times.

Another aspect of the idea of coital infrequency can be seen by considering the taboos on coitus which have a magical basis.

These taboos involve good luck if one restrains himself and punishment if one does not. These are generally called taboos on sexual intercourse, and are extraordinarily varied.

One conversation with a young man on this subject actually began with a consideration of whether people went to the Japanese hospital, and if so, what happened. The man said that the people really disliked the hospital, but went because a policeman would punish them and their whole families if they refused to go. The main reason why the Japanese thought there were so few people left on Yap was because of bad houses, bad food, no clothing, and too much adultery among married women. However, the informant never heard the Japanese say that too much intercourse was bad.

Most women only stay in the menstrual area for three days, and intercourse could begin the day a woman got out. Intercourse during menstruation is bad because then the kan or spirit of the menstrual area is angry and the woman is punished--but never the man.

This kan is like the husband as he watches over the menstrual area, and is very jealous if he observes intercourse there. The specific punishment of the transgressor is that she will menstruate every several days and have to keep going back to the menstrual hut. If she, on the other hand, visits this area every month but allows no man intercourse there, then she may be rewarded by the kan with pregnancy.

Another instance of taboos on intercourse, stated in much the same language as in the context of the drunken party previously mentioned, is where the man is contemplating some "big work" such as going away to study, making a canoe or stone platform, or fishing. Here we find restrictions before, during and after the work.

For example, if a man is building a house, from the first time the first stick is cut until it is finished, and after that until the first dust from termites in the house posts fall, he must not have intercourse.

If a man is building a canoe, he cannot have intercourse during the building period nor afterward until the wristlet decorations of white, unopened coconut fronds dry on his arm and fall off. The man for whom the canoe is built cannot have intercourse during the building of it nor for three days thereafter.

If a paved stone area or wunibei is being built, no one who works on it can have intercourse from the time the first stone is picked up until it is complete and moss has grown on the first rock.

Deep sea fishing, where canoes go out with loads of men to snare flying fish, has certain restrictions. The man who assembles the crew cannot have intercourse from the time he first thinks of the project, and the crew has a like restriction from the time of their assembly. The crew must live on the beach and never go inland nor associate with women until at least a hundred days after the fishing ceases.

The same sort of restrictions apply in another kind of fishing where two large canoes take a net between them and, turning on each other, close the net and haul it in. Following the end of this fishing, however, abstinence is observed for only fifty days.

Fishing with small hand nets inside the reef carries a sex taboo of five days before the work begins, during it and for three days after its completion. The same restriction applies in trolling inside the reef.

When building a fish weir, all the workers must abstain from intercourse all through its construction and for seven days thereafter.

When deep sea trolling is in progress, the crews abstain for about two years at a time, although the trolling takes place for only thirty to sixty days out of a year. The crew consists of from seven to ten men. They go out and return each morning, and must live at the falu (young men's clubhouse), and experience a great loss of time because of bad weather or calms. When they finally decide to quit trolling altogether, they must remain in the falu for a hundred days more, still having no contact with women.

For all sizes of fish traps, there are taboos on intercourse when it is first used, for both the maker and the owner, and for the three days after its first use.

Fishing with a spear requires only one abstinent day afterward.

In making a fish weir of wood and bamboo, there is no intercourse allowed during the construction nor for twenty days thereafter.

A general rule is never to go into the water the same day as one has had intercourse.

Persons who mourn a corpse by sitting in the cook house of the dead person for eighteen days must not have intercourse during that time nor for the whole year following.

If a wife is pregnant and her husband commits adultery, then when their child has grown to about six years of age, the man will die. And as mentioned in another context, intercourse is forbidden to a couple for a varying number of years depending on the informant, but tending to run from two to three years or so until the child can walk or understand words.

Many other coital taboos have been mentioned in the context of garden work where the women are chiefly restricted. Where dances or warfare are contemplated, or favors asked in a magical and religious context, and in many other situations, such enforced abstinence is required. These illustrations give the essential idea that through conscious volition, many restrictions on the timing of sexual intercourse have been built up. If they ever operated as a completely functional system, it is easy to see how family size in Yap was controlled.

Now that the idealized statements on coital restrictions have been mentioned, it is even more important to see how strictly these rules are observed. Verbal statements from informants vary greatly in this regard. Some are motivated by a wish to appear very strictly conservative. Others want to convey the impression that they scorn the old ways and are expert in American customs in this field.

The question of motivation was shown quite beautifully in a conversation one night with a young man who was probably the most belligerently "change minded" native on the island. He had lived away from Yap, had been on trading ships, and in general realized quite thoroughly how strange Yap customs were to the outside world. He told us how deliberately he had violated eating and working taboos and the restrictions against intercourse after birth. His harangue against the other natives, his intensity of voice and emotional manner showed what a strain and anxiety had been the price of this newly-won emancipation.

Another check on the strictness of native compliance with these rules is to use the birth dates from the census on each of a fertile woman's offspring, living or dead. The actual figures reveal a pattern of great regularity in this spacing, and wide intervals between births.

This precision of spacing might be attributed primarily to the willingness of the women to terminate any pregnancy which might happen if she violated the long postnatal term of abstinence. But since these rules are known to her, and since their violation is believed to bring severe consequences, it is reasonable to assume that this one taboo, at least, aids greatly in the spacing, and wide intervals between births.

Let us assume that the postnatal taboo accounts regularly for one or more of the childless years between births, enforced by anxiety over too frequent intercourse, and in addition allowing for a perfunctory but not inviolable observance of the other miscellaneous taboos. On this hypothesis, in accordance with Pearl's data on the frequency of intercourse to cause a statistical pregnancy, relatively little chance exists for a woman to become pregnant. If, in addition, she is willing to abort whenever the pregnancy is inconvenient for any of a variety of reasons then there is a control of the fertility of women in general which is about as efficient as most contraceptive attempts.

The data indicate that this interval between births is not so long in older women. The figures make it probable that children could be produced at normally close-spaced intervals. The motivation for older women may be that they are aging a bit so that the social and psychological advantages of having children become more clearly felt.

To climax all this emphasis on sexual abstinence, there is a bit of evidence which came from a very valued informant who seemed to be interested in Yap depopulation. He was discussing whether or not any or all of the coital taboos could have anything to do with the lack of babies, and made the surprising statement that about two years ago the major religious men of Yap had met,

and said that they did think this had something to do with the case. They then thought that it would be good if the taboos of all kinds were lifted for routine activities such as fishing, house building, dancing and gardening. This conference decided that the chiefs and old men should go home and tell all the people that they should have intercourse without paying any attention to these taboos. This meeting for Rul district supposedly took place down by the site of one of the men's club houses (falus) about two years ago. It is thought to be in effect now, although people will still verbalize on the regular pattern of taboos. This information was given in such great confidence that it was impossible to try and check it openly. Although no further confirmation was obtained, it remains a possibility which must be considered.

Since pregnancies do occur, however, and many of them in situations where a child is not wanted for a variety of reasons, it will be well now to consider whether or not there are deliberate attempts to prevent conception or to terminate it by abortion.

## C. Contraception and Abortion

Although the regulation of coitus among the Yap people is at least a partial brake on their rate of increase, it is not the only such control. Additional devices include the widely known methods of abortion and contraception. The information to be presented here on abortion comes from a native woman who knew many of the facts and was probably motivated to tell the truth.

She said that there are abortifacients which are taken orally, but she could not give the precise mixture of ingredients. This ignorance is common among informants concerning secret or partially secret medicines in Yap. She knew the name of someone who knew the formula, however. There is also a medicine to rub on the stomach, but she did not know its formula either. She said that boiled (concentrated) sea water could cause abortion in the first, second or third month of pregnancy. After that, as "everyone knew", it was dangerous. Boiled sea water, as "everyone knew," could also prevent conception if used intravaginally after intercourse.

To get a better idea of her reasoning, her ideas about the mechanics of conception were examined. Here again, the old idea was that a man did not matter. If the spirits were happy, and the parents as well, then she would have a baby. But now some young people think that if one does not sleep with a woman, she will not have it anyway. She thought herself that intercourse is necessary to produce children.

Next, she went on to consider mechanical means of abortion. She volunteered that if a woman gets pregnant, in one or two months she finds the leaves of certain species of trees, not just any leaves. These leaves were wadded up like this (she made a wad about half an inch long and a quarter of an inch wide) and then she put it inside her like this (she put the tips of her extended fingers together to imitate the cervix of the uterus and put the plug in her fingers). Then she would scratch like this (she scratched all about the tips of her fingers). This scratching injures the parts, and if there is not this injury, the abortion does not happen and it hurts more.

She said that it took about two or three days to abort. She did not know which leaves were used, but some people did know. Some people said that any leaves could be used, and others said that the leaves had to come from certain trees. She claimed never to have aborted at all. It was very bad to try this abortion in the sixth or seventh month, because the woman got very sick and sometimes died. It was bad in the fourth month, and best in the first or second.

If someone wants an abortifacient medicine but does not know one, she will take a <u>yar</u> (a kind of Yap shell money) to someone who does know. Then she would tell the person to keep the transaction a secret. If neither the father nor mother wanted the child, then either could arrange for the medicine. But if a woman were trying to keep her pregnancy secret from her husband who wanted a child, she would go very secretly to make the

arrangements. If the husband knew, he would be angry and beat her. The informant claimed not to know whether many people do that, and she would not give any names. She only "heard" about it. She has had several children.

This evidence, and similar data from other men and women, indicates the presence of well-known means of abortion which in some manner are successful, and from the attitudes expressed, not too deadly. The question then arises as to the motivation for abortion in Yap, and whether it is strong enough to cause a large number of women to abort repeatedly.

In this connection, it is assumed that Yap women do get pregnant normally, but abort when it suits their convenience. Abortion is easy to understand in an unmarried girl, since there is a fairly strong sanction against illegitimacy. The girl will learn the technique of abortion from an older person and perform the actual operation herself, or have a friend do it.

The situation is not so simple for married women. Most girls marry at a very early age, yet very few produce as many as eight or ten children. The population is falling off in a society where women treat children very well, and a strong patrilineage and sib structure is valued by men and women alike.

To understand the commonest motivation for abortion, it is necessary to recall the concept of play and the general attitude of young people toward serious life. First of all, there is nothing much that a young man has to learn that is very difficult. His father or head of the patrilineage is able to show him the few practical occupations, and the ceremonial life is dominated by the old men. Even if a young man has children, his inferior position is alleviated only a trifle.

As she grows up, the girl is equally expected to play, and to do so for a long time. At the same time, her parents want her to grow up and produce children of her own.

What actually seems to happen is this. A young couple will start courting in the prescribed manner. After awhile, because it is easier and much more comfortable, they will get married. After marriage, the general pattern is that the young man will cease to act as if he loves his wife and will be severely criticized if he sleeps with her every night or stays away from the men's house or other gathering place where the boys hang out. It is considered as a general sign of weakness, and he can count on ridicule because his age-mates consider him as a man without character.

As one young man put it: as soon as a man and woman marry, they immediately start getting tired of each other. After only a short time it is like food, and one cannot eat the same food all the time. People always want a change. Therefore, no matter whether a man is home little or much, he cannot show much affection nor use the appropriate courting techniques. There should be a sort of cool relationship where the man tells his wife what went on that day and discusses future moves that might affect

the whole family. As soon as a man gets a wife, she immediately becomes different from other women in that she is now easy to sleep with. The small value of sexual intercourse in the general courting routine has been shown. The greatest value to a man in courtship is to get a woman to fall in love with him and he with the woman. The story is that the man simply cannot go on without her

Another manifestation of this contrast comes in the direct sexual practice. Although it is not uniform in all cases, it gives insight into the different sentiments in and out of marriage. The main difference in sexual relations between man and wife, and man with other than wife, is the practice of gichigich with the other woman.

In gichigich, the penis is barely inserted in the labia majora and the head of it moved up and down and sidewise for a varying period of time, usually quite long. The rate of movement varies from fast to slow with contrapuntally varying themes invoked. During this time, the woman ideally goes into a frenzied condition, enjoying several orgasms (apparently of a clitorine rather than vaginal type, since the main emphasis is on the clitoris), and in general she becomes quite weak and helpless. At each orgasm she urinates a little. (The informant commented that the first time this happened to him, he though he was on fire.)

After a prolonged experience of this kind, the entrance to the vagina becomes red and inflamed and practically closed up so that there seems to be no opening left at all. The man then allows the girl, who has been squatting on his lap as he knelt in front of her, to lie backward while he plunges his penis into the full depths of the vagina, which is so tight that it nearly kills both of them. After a few movements he has an orgasm himself. The girl is completely exhausted at the final procedure, and the man only slightly less so.

This is contrasted with the practice in marriage, where gichigich is deliberately not done. If a man did this, his wife would insist on it all the time and he would not be able to work like other men. Neither would his wife want to work as she should. If gichigich has been practiced before marriage, the man substitutes a regular style of intercourse, man on woman as is commonest in America, as soon as possible after marriage.

The natives regard gichigich as contraceptive, as well. They think that pregnancy will not result so readily from this method because the woman's body is like fire and her milk (f'ud) from the uterus is stopped so that she only urinates.

Other means of contraception were discussed by a female informant. She ruled out the use of condoms as an important factor, and also grass plugs in the cervix.

Still further contraceptive behavior is involved in coitus interruptus. She said that is a man goes away before he is happy, this prevents conception. And sometimes the woman will jerk away too. If the man does not want the children, he will go away, but if he does not care and the woman does, then she

goes away (she reared her body back to show this more graphically).

The extent of contraception is limited at best. Most men know of coitus interruptus, and so do the women. There are several known cases where it has been practiced. But without being able to prove from statistics that contraception is a limited affair, it is felt that this is the case. Nearly all the men disclaim it as a habitual practice.

In reverting to the motivation for children in Yap, it is clear from the discussion of sexual relations that extramarital love affairs are frequent. A married man keeps on the lookout for another lover, and so does the wife for another man. Hence, the natives commit adultery, fight and divorce.

Adultery is most often verbalized as a cause for divorce as a result of this restless attitude of young married people. Divorce is a relatively painless procedure, with either partner initiating action and carrying it through. Parents or other relatives seldom object, because the marriage has done little but unite two families in two separate patrilineages. With the exception of the few cases where an extraordinary gem of a spouse has been obtained, or an extraordinarily influential patrilineage has been brought into the fold, there is little worry whether a boy or girl is married to one person or another. A succession of marriages is about as good as a long, solid one.

But if children are born, then the patrilineage is carried on through a son and the sib is perpetuated through a daughter. That is, the husband's patrilineage is carried on, just as is the wife's sib. The children and mother's sister's offspring become classificatory siblings and members of the same sib. The children become classificatory parents to mother's brother's children.

Thus, the parents of the married couple have an interest in the marriage almost solely in terms of whether there are children born. The couple is necessary to produce the desired continuity and to insure the transmission of material wealth by inheritance.

A childless marriage, then, involves no problem of ending the connection between the husband's and wife's relatives. It is little more than a formalized love affair in which there is only slight public concern except insofar as the couple are a potential childbearing unit.

When divorce occurs in a fruitful marriage, however, there is a complex severance of kinship ties as expressed in visits and other interaction with maternal relatives. The custom is that children stay with their father after divorce, and consequently are no longer in touch with their mother's sib and patrilineage members. Fruitful marriages are therefore held together by fairly strong social pressures, and are much less liable to divorce than childless couples are. When a fruitful man and wife are contemplating divorce, pressure is brought to bear on them to stay together. This pressure, mainly from their relatives,

is almost entirely in terms of an appeal to the partners not to be selfish to the child and cause it to lose its mother. It was never possible to induce the natives to discuss the situation in wider terms of family ties. The primary emphasis, in moral terms, was a very strongly as a serious wrong to the child.

It is possible to integrate the functions of abortion into this picture by means of data from the present census of Yap. The figures indicate that there were 518 women over twenty years old who are known to have been pregnant, and 291 who claimed that they had never been pregnant.

The larger group who are known to have been pregnant show varying numbers of pregnancies. This group seems to have taken a more mature attitude toward childbearing, or been luckier. Their expedient was to space children, as noted before, after starting the family at a relatively early age. In spite of the low modal age of first childbearing, however, it is likely that many of the women who claimed to have had their first pregnancy at varying ages after twenty had actually aborted during their previous pregnancies in order to prolong their period of carefree promiscuity.

If there were liars among those women who claimed that they had never been pregnant, it is possible that some of them became sterile as a result of abortion. It is at least possible, however, that this group has been victimized by the Yap patterns of play and rapid sequences of divorces to such an extent that they were never impregnated.

This evidence may give the clue as to how abortion, which is widely known and certainly available to all, is used. It could function to prolong the youthful period of play, to give a false appearance of adherence to child spacing taboos, to limit the size of families in order to facilitate the mother's housework and child care, and to get rid of embarrassing pregnancies at a time when the girl was temporarily unmarried.

Instead of being the prime means for population control, abortion is the auxiliary device by which a woman saves herself from disgrace, or keeps the total number of children low.

In the census data, comparatively few abortions were reported. The ones which appeared tended to be clustered, several to a woman. Just what this means is debatable. One rather obvious answer is that the women refuse to report abortions, and over the years would be quite unable to remember accurately even if they wanted to be honest.

The reason why it is insisted that women have aborted extensively is that some means is necessary to accomplish the gradual and continued reduction in the birth rate which must have accompanied the fall in death rate if the gross population size were to decline as it did. The only available solution is in terms of some process flexible enough to adapt to conditions of cultural change, such as the concept of play, and to adapt to situations

of stress such as have been encountered throughout the successive changes in administration on Yap.

The probable role of abortion, then, is that it helps roughly one-third of the women to remain entirely childless, allow for a lax observance of the pregnancy taboo and other sexual restrictions, and seems to have been the means for lowering the birth rate over the long period since foreign administrations first took over the island.

This last consideration is without doubt the most important, and even though the evidence is to a great extent inferential, it fits the known conditions better than any other hypothesis.

D. Emigration of Men

One of the causes of depopulation in Oceania which is more often cited in the literature than not is the movement of men to other islands to work in plantations, or their isolation on their home island for the same purpose. It was known that many Yap men had been away from the island in the past, and a routine question on the number of trips abroad and duration of each trip was included as part of the present census of Yap.

Most of the time spent away from Yap was at Palau working in the phosphate mines, or on other Micronesian islands. In general, this work was on a voluntary basis. The men were selected by by village and district chiefs after these officials had been assigned quotas by the Japanese. There was doubtless a certain element of coercion or the getting rid of undesirable members of the community, but since wages were high and working conditions reasonably good, the factor of exile was probably at a minimum. Many men volunteered time after time, and many expressed their satisfaction at the good job and money income. The relevance of this movement of males to depopulation lies in the possibility that their absence from Yap might have contributed to a fall in the birth rate.

A test of this hypothesis was afforded by tabulating the census data. It was possible to determine whether men who had spent many years on other islands had fewer Yap children than those who had spent more time at home.

The first series of men used for this study were all those over twenty years of age in the census. Although the number of trips away from Yap for each man is probably accurate, the duration of each trip is probably less so because of native vagueness concerning the passage of time. Consequently, the total duration of time spent away from Yap was used for this study, and the series divided arbitrarily into those who had been away less than five years and those who had been away for more. Five years was chosen as the dividing line rather than ten years because too few men had left Yap for periods of more than ten years.

The result of this first study, surprisingly enough, was that those who had been away less than five years had significantly fewer children. That is, the more prolific males were those who were away from Yap the longest. It was clear, however, that the result was biased by the fact that there were too many young men in the "less than five years" category who had not yet settled down to the serious business of procreation.

A second study was made in which the series was limited in size so that it included only males over thirty years of age. In this case, the results showed no significant difference in the number of progeny between men who were away less than five years and those who were away for a longer time.

The probable explanation of this similarity lies in the fact that native absenteeism from Yap was rarely continuous. Most

of the men made frequent returns home to Yap between periods abroad. Whether this frequency of return resulted from becoming useless to the Japanese through homesickness, or whether it was a deliberate Japanese policy to prevent a further drop in the birth rate, is not known.

The conclusion to be derived from this study is that male absenteeism from Yap cannot be considered as a basic reason why, in spite of medical and sanitary measures on the part of the Japanese, the population continued to decline.

## E. Disruption of Society and Culture

The previous chapters have dealt with more or less clear mechanisms of depopulation through disease, abortion, lack of coitus, epidemics and the emigration of native men abroad as laborers for varying lengths of time. This chapter, on the other hand, will deal with more intangible aspects of native life. In the summary of the literature on Oceanic depopulation, it was noted that many authors have speculated over such causes as a deteriorating culture, pressure from the outside world, general apathy, and some mysterious psychological process leading to a lack of children. This literature deals, in a specialized way, with a subject dear to the hearts of anthropologists: the impact of Western civilization on primitive peoples everywhere.

Anthropological experience in the study of this field has shown that the most profitable way of analyzing the meeting of primitive and civilized peoples is to find out how much of the aboriginal culture is intact and how much is yielding to foreign ideas. The religious, familial and political activities of the native community are particularly diagnostic of the rate of change, as well as of social solidarity and morale. Most of the ensuing chapter, therefore, will deal with these aspects of Yap life today, and their relevance to the depopulation.

In introducing this phase of the problem on Yap, it will be well to review a part of the Palau Quarterly Report for 1 January 1949.

### Excerpts from Palau Quarterly Report 1 January 1949

### Civil Government - Yap

(c) Development and expansion program:

Upon assuming command of the CivAd Detachment at Yap, the CivAdRep found a situation wherein the older, conservative segment of the population was, with the sanction and assistance of the previous administration, suppressing a very large percentage of the total population made up of young and middle-aged men and women who were desirous of changing several old, outmoded customs and improving their general lot. Within the last six weeks some fifty (50) meetings have been held by the "Young Peoples' Party" and the ten district chiefs. CivAdRep refrained from supporting either element, but did grant the young people the right to assemble, which they claimed had been denied them heretofore. At a ceremony on 22 November attended by all the district chiefs and their retainers as well as a representative body of the young people, a ceremonious exchange of shell money was made to seal a pact between the two factions which provided for such changes in local custom and practice as the abolishment of numerous cooking pots for each age and sex group within a family unit; abolition of the menstrual hut and taboos forbidding girls to attend school during that time, as well as the doing away of the custom of making the dwelling places taboo to males during the menstrual period; houses will no longer be taboo to their customary inhabitants at the time of a death, as has been the custom in the past; both men and women will be allowed to

wear American clothes or suitable adaptations thereof both in their villages and in Yaptown. Previously it was forbidden by the chiefs for anyone to wear other than traditional breechelout and grass skirt. The "miligin" or low caste people will be permitted to attend school. Local medicine and healing magic are to be abolished in favor of universal use of American medical facilities. These are but a few of the proposed changes. CivAdRep Yap, in a purely advisory capacity, warned against a too rapid change-over, and presented some of the problems inherent in assuming new ways of living. For example the need of tailors, regular washings with soap and water, and the cost involved was stressed with regard to the desire to wear clothing.

This minor and peacefully accomplished "revolution" had been fermenting for some time, and was brought to a head when numerous greivances were aired by a vast number of young men who felt they were being held back while all the other islands in the Trust Territory were making progressive strides. The Yap men and women on Guam, at Truk and the seamen trainees aboard ship were instrumental in bringing home to the stay-at-homes the developments in the other areas they had visited. That this change-over was made without bloodshed or a division of the population into two enemy camps is the more remarkable when it is considered that the young men and women had seriously thought of establishing new homes on presently unoccupied lands and setting up a government apart from the established one. This entire situation bears out the fact that the people of the Trust Territory are not to be bound by traditional habits and customs, but when conscious of the progress and improvement in their welfare that can be made, customary adherences can and will be foresaken. The principal objections to the new order was viewed by the chiefs and other old retainers who saw that they could little profit by any changes, and were naturally suspicious of innovations. They had enjoyed a revival of their aboriginal autocracy in which their word was law, and were unwilling to forfeit their present status for the sake of the welfare of the Yap. CivAdRep patiently and in detail, explained that the prestige and certain privileges of chieftainship were not to be sacrificed by permitting the changes advocated by the young people, but that a spirit of unity and cooperation would again exist in the place of the resentment and "underground" movement presently developing. With mediation and a considerable amount of reciprocal yielding of certain tenents, a workable and satisfactory agreement was reached, the chiefs still enjoy their prestigeful positions and the young people are showing a more overt respect to their elder statesmen.

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3. Summary

The proposed changes in Yap are viewed with interest. It is believed that there will be more li-service than actual change for awhile; however, there is a definite element in Yap that want changes.

## Economic Development

4. (b) Place in native economy:

Yap people are not interested in manufacturing articles they themselves do not use. Pandanus and coconut fronds are not available as yet in sufficient quantity to make mats , the only practical item the Yap people can make. A few purses are being made, but the quality is yet to reach its optimum. It is felt, however, that with the new impetus given the standard of living by the younger element in the population, plus the proposed handicraft training period in the schools, there should be a definite rise in money articles soon.

## Education - Yap

1. (d) The new school building, still unfinished, was apparently designed without adequate information concerning conditions on the island. The deficiencies are being corrected by the Yapese themselves and by CivAdRep Yap as quickly as needed materials can be collected.

4. (a) Native Culture

The people in the islands of Koror, Peleliu and Angaur, where they are in daily contact with Americans, show a marked increase in the acceptance of western culture. One of the changes stemming from American rule seems to be an emancipation of the young people. The elders complain that the young people will not mind them, and that, as a consequence, drinking, thieving and general lawbreaking is on the increase. There is no doubt but what the heads of families and chiefs are losing some of their former authority. It will be more so as the people progress toward self government.

Through the leadership of the younger generation, a program of political and social reform is rapidly taking shape on Yap. With strict neutrality being observed by Americans, the Yap people themselves are adopting new ideas and abandoning some of the old customs with a rapidity that is surprising in view of the opinion formerly held in some quarters that Yap society was static, culturally self-sufficient, and loathe to change. In meetings between the young men and chiefs, decisions have been reached concerning such things as abolition of menstrual houses, universal school attendance, adoption of western clothing etc.

(b) Efforts to Preserve (Revive) Local Culture

CivAd makes every effort to preserve local culture where it does not interfere with directives from higher authority. Some of the directives do conflict with the local culture but they are in the interest of the people and placidly complied with when the reasons are explained. The old custom of neighbor help neighbor has practically disappeared. Due to our free enterprise system the Palauans are becoming individualisms and private entrepreneurs are charging other Palauans all the traffic will bear. This is believed detrimental to the local welfare of the people, however, the Civil Administrator is not permitted to introduce price controls or regulate wages. Efforts have been made to combat this practice by persuasion through the High Chiefs and Palau Council but without success.

Yap has not reached the same stage of acculturation as the Palaus. The same effort will be exercised to preserve their local culture as in the Palaus.

Short Yap Field Trip; Report of

Recommendations: In view of the fact that a Yap or Satlelite Island interpreter is unnecessary on the short Yap trip it is recommended that none be taken. On all islands except Sorol there is at least one English speaking person. On Sorol Japanese can be used and there are adequate interpreters available in the Palaus for this.

The advisor sent from Yap is an unnecessary adjunct to the trip as he disappeared almost immediately after the party reached an island and reappeared only when leaving at which time he was loaded down with tribute exacted from the islands. Questioning among people revealed that the 2-way gift system rarely works both ways - the out islanders receiving very little in return. On Ngulu the advisor (Foneg) got a greater value of items than ITC was able to purchase. In fact, the Ngulu people were in the act of selling their goods to ITC when they were evidently told not to sell to ITC but to give them to the Yap man.

Three different out-islanders asked this officer why we brought the "Yap man." Further questioning revealed that although the Japanese let the Yap man collect tribute, he was watched to see that he gave adequate goods in return and that he did not take too much.

When the trip ended in Yap, the Yap man had collected the following from the out-islanders: approximately 35 mats (3' x 5' min.), about 20 lavalaps, 10 gallons of coconut syrup, 5 balls of 3/16 coir rope about 16" in diameter, and $25.00 in cash. For this he gave about 4 squash, 4 wax-gourd and other minor amounts of produce. On each island visited these items were growing so that he did not take them gifts which were needed either for food use or seed.

Field Trip to Outer Yap Islands; Report On

Summary: The people on these outer islands everywhere expressed a desire to be relieved of their thralldom to the Yap chiefs. In the past they have not cared probably or dared to express this feeling because of the custom of bringing along representatives of the Yap chiefs to act as interpreters for the field party. With the absence of such representatives on this trip, the people became quite vocal in their desire for freedom. As they put it - "We want the chance to become "up" men and not remain dog men as the Yap chiefs want us to be." The chief at Gagil on Yap has just recently called in representatives from these outer islands who were ordered by him to tell their fellowman that it was his edict that no copra waste be produced any more, no trading was to be done with ITC and no young men were to be allowed to go anywhere for training except to Yap. The greater part of the coir rope bought by ITC on this trip was being held by the people to be delivered to the Yap chiefs as part payment of their "tribute" which in the past has been collected by his representatives traveling with the field party.

This document symbolizes one of the main and first impressions that an observer gets whether he stays for a long or short time. It is, however, only in the longer period of observation that a relatively true idea of the underlying conflicts can be gained. That is to say, at first glance it appears, because of the excessive noise made by a very vocal minority, that revolution is imminent, that the young men have been oppressed, and that a job of liberation is to be done. It is only with the perspective of several months or years that one comes to the realization that Yap tactics tend to run along certain patterns, and that almost all the communication is made through one or two rather maladjusted young men who can speak in a broken English to the people in charge.

The purpose here must be, however, to put the problem a bit more systematically in terms of just what is upset and whether or not it could possible affect the people involved in a way that might cause depopulation. This will of necessity be briefer and a bit different in orientation than it would be if the organization were slanted say to the problem of culture change per se, but will treat some of the same aspects.

A way to handle the problem is to see what of the culture is intact and what is in a process of change or has disappeared entirely, and the types of persons involved insofar as age and status are concerned.

An always important clue can be gained through an observation of the extent to which the magical and religious structure is intact. One side of the religious structure is that dealing with the creation of Yap and spheres above and below, together with a whole pantheon of gods. Müller (1917, pp. 306-378) refers to these concepts and without hesitation states that there is little general or specific knowledge among the people at large, and even great confusion among the old men and priests.

In general, the world in the beginning was void and darkness, there being only one god in existence who lived in a higher region. There was no sun or moon. This man was an ethically perfect being not subject to disease, needing only to think of food to satisfy hunger, never showing anger, nor punishing anyone. His work was world creation, the result consisting of four spheres and the gods. He used two methods of creation: using dirt of his skin plus water and air from within himself, molded by his own hands; the second method was through just thinking.

He first created the uppermost sphere for himself where his house, resembling those on Palau, exists. He continued creation, next project being the heavens for the other gods, then the underworld, and finally the earthly sphere. The world thus created in 4 stories, he created the sun and moon.

Very little could be found out about the gods' activities but there are several examples. One is the magician who functions at dances in heaven, another produces rain and helps in fishing, planting or cultivation, another manages building or manual labor tasks, and another created and managed all the evils or diseases of heaven.

The topography and entrance of this region is well known and in most cases resembles Yap or Palau. Müller found great variation in names, places and relationships of the spheres with emphasis on one god or another. He had to go to the most learned men for any detail.

After this being had created the gods of heaven and underworld, he created plants and animals on earth, but one of his suborindate gods created man out of earth, his own breath and shadow. When a person dies his body remains on earth, the breath returning to the nose of this subordinate and the shadows to the shadow of the original god, the shadows thus being conceived as a permanent non-material substance. There was a soul but nothing at all could be learned about it. After the gods had created a certain number of human beings, they tired of this method and so gave sex, later taught agriculture and allowed people to spread out on Yap.

No one can escape the god of death, who spends most of his time on earth. He catches souls in a net, putting these in a canoe in which he rides. On a drizzling night with a full moon he is most likely about. He comes down from heaven, lands on Truk and works west as far as Angaur in the Palaus.

Eventually the collected souls arrive at the clubhouse in heaven where the good and bad people are separated. Bad is not an ethical concept, but comprises those people who have ringworms, no nose, serious wounds, elephantiasis or who died of tuberculosis. Any woman dying in child birth is included. These bad ones are thrown into the underworld and the others are assigned to the gods of heaven. The god of death eats those souls who have died at sea or were not buried with money. Actually the god of death comes twice: first to kill the victim, the soul remaining with the body until after the funeral; secondly to take the soul away. There are variations as to whether there is more than one soul, and about the indicators as to whom will die. It is also possible for a person to live for about a year after his soul has been stolen. There is some uncertainty as to whether all souls go to heaven. Life in heaven is good and similar to that on Yap.

Sometimes souls return to their homes on earth and stay invisible or appear in the form of a mouse or starling. This soul is called <u>thagith</u>. Whenever eating or drinking, a man tosses a bit on the ground, and matters a few words to his <u>thagith</u>. If the main family residence is destroyed a temporary shelter will be made for them on the stone platform, however it may be years in building or never built. Müller notes one, where several amulets are present and a man present remembers two others when he was a child.

At the time the present expedition was on Yap, most of this was not even known in the slight detail given here. Among many of the oldest men it was possible to get some of the names and some of the concepts but most people had only a vague idea of heaven. They retain a lively fear of various spirits which might harm them in some way, these being usually subsumed under the name of <u>kan</u>, a being that is nearly always present but very seldom seen.

The conclusion that must be reached then is that to ethnologists today, the material is almost unavailable to any completeness or detail. Even when one resorts to mentioning the various names that can be extracted from Müller's book, the young and adult men and women had so vague a recollection that almost no material could be elicited. Moreover, the names from the complex genealogies of gods and men, eliminated above, were not even known to such a being as Fithingmou ni ga', avowedly one of the wisest and most intelligent men on Yap.

At the present time all this is significant in their life much in the same sense as background phenomena. That is, they are regularly aware of the gods in heaven, an underworld, something going somewhere after death and the return of the thagiths which are still generally propiated.

The phase of formal religious experience which is still prominent in their life, still being considered by chiefs and people alike as vital to total well being, is the series of festivals that are also mentioned by Müller. He has some complete and incomplete series of these, and it was possible to get material which, while differing in many details from his, essentially confirmed the general order of things.

These ceremonies involved the highest ranking religious men on the island, the village and district chiefs, many old men and involved all of the people of a certain area by means of taboos or food production for varying periods. There are seven gods who have varying and overlapping territories on the island, and who tend to promote the well-being of the people of each territory if the ceremonies are faithfully carried out. These ceremonies are one each lunar month, there being twelve in one year and thirteen the next.

For one of these gods, named Wuthre, the cycle was being completed as usual at the time we were there. One brief example from the usual twelve or thirteen will illustrate the general procedure.

In the month called ulog, at the time of the new moon, the chief of Dugor, Okau comes bringing a mareuw (unsprouted ripe coconut) and the priest takes a wongaiy (double sprouted coconut) which they exchange. Then the priest is under a taboo for three days. The day after this exchange, he goes to the 'ar tree (Premna integrifolia) and, breaking off a small piece, sits down to husk the mareuw with it and puts the nut into a Yap earthen pot. He then grates the coconut and mixes it with the leaves of the rich tree (Cordyline terminalis). (These leaves are commonly thought to have aphrodisiacal qualities in other contexts.) This oily mixture of coconut gratings and leaves is then spread over a stone called Wuthre at the taliu of the god Wuthre. (A taliu is a tabooed sacred area where the gods are supposed to live.) This is to make Wuthre feel very strong and invigorated, just as a Yap man might feel, because there will be a lot of eating and ceremony the next month and they want him to feel good.

This is a very simple ceremony. Many of them, however, go on for pages with innumerable details that must be followed very exactly.

In getting essentially the same ceremony from two priests, there was quite wide variation in many details, each man, however, insisting that it be done in just his manner. This suggests a certain forgetting, inventing and alteration to fit the circumstance of an untimely death or poor memory. This type of ceremony is known fairly widely, not in its details, but in name, time of occurrence, and general meaning for the people involved. There is a great deal of planning and work in them.

Much more than any of the relatively formal procedures outlined above, the daily specific requests of chiefs or individuals to Kans, or gods, a predominant part in the Yap religious life. That is to say, if a man wants good fishing he says a pig (a simple verbal formula often in esoteric non-translatable language). This is usually to a kan and may or may not be to one of the so-called patrilineal ghosts. When a certain man was making a huge fire to burn lime he stood on the pile of timbers, and using a branch of a tree, turned in four directions saying a short sentence and that was all. Many times when a man would break a taboo he would immediately say a pig which was to take care of this emergency. People know these by the dozen, and since they are personal property, they are usually purchased or handed down by a relative when needed.

In a slightly wider context, if a village were to have a dance and wanted to insure a successful performance over other villages, the chief of a village might go to the old woman in Balabat who is a tamerong for the dance (knows how to do magic which will insure good results). She has a taliu but neither it nor she is as powerful as many, and in general no one above the stature of a village chief would consult her. Four or five people would come to her asking that they have a good dance and give her some money. She would go to the taliu and make the proper performance to influence the kan who lived there. If the dance were successful, she was thanked after which she would own the money. She learned about the pig from her brother who had no brother or child. She also knows a pig for success in war from the same source, but it is no longer used.

An example of bad magic helps to round out the picture of magic at this level. It is a case where someone stole something and the thief can be found out or even punished by using a formula that only a few people know. Being a Catholic and saying you no longer believe in Yap magic doesn't help at all. An actual case involved the theft of several Japanese medals from a chief. All the people had left the particular village at the time when bombings were bad, and this chief had put the medals in the strong box of a friend in another village. This man, after American troops were in the harbor, traded them for some cigarettes and food. The real owner then went to get them to give to an American officer (the first step to his rise to the point of being considered by some Americans as being chief of all Yap) as souvenirs. He found them gone, but knew from the minute scratches of the lock that it had been picked. He tried to get someone to tell him who it was but failed, so he went to a man who knew the appropriate bad magic and asked to have the thief killed.

The bad magic was made for nine days, morning and night, and at the end of this time the man who had been trusted with the medals dies. He was then considered to be the thief.

This sort of thing on a level of effigy making and destruction probably still goes on to an extent, but it is not possible to get reliable information on it.

At a level involving the whole island, there is an example in the causes of the bad storms which occurred while we were there. This viewpoint which will be given as to the causes was widely accepted by all peoples, the details varying with the particular concept held. In general it was believed that a chief who had felt the people were not showing enough respect for him, and who felt that he had been cheated out of some of his influence with the Americans, had made some pretext or other to go to Guam and that just before leaving he had made the arrangements which brought on the trouble. This chief had a friend who had a relative who was the little brother of the b'etiliu (the most powerful type of magician that is now extant) of a very powerful taliu. Through this connection he made arrangements to have a series of typhoons, a tidal wave, and following in about two months, an epidemic of some kind. For this event, the man who made the arrangements, and the b'etiliu must die. The actual sequence of events followed exactly as predicted, even to the point of the two men dying. Their deaths are not explainable by any unusual means. They simply died, and according to one chief on the proper number of odd days after the last storm. This is not provable and depends on what you call the last storm and when it ended, and no one had made an exact number of days prediction before the event. An odd touch was added in that the several chiefs who were most interested in hurting the guilty chief were trying to get the widow of the go-between to tell the name of the instigator, and were doing it by a sort of third degree method of extensive interminable questioning. In spite of variations in the details the common thread of human causation by supernatural means ran through every version.

The everyday run of the mill experience of a man at the petillu level is interesting in the variety of work and variety of concentulization. This man inherited the job from his father and before his father are a group of men, and preceding them a group of kans the last of which was half man starting the line of men in power at the taliu.

One time when the Japanese were still there the Gilifith chief wanted him to have the Japanese driven out, but without loss of lives among the Yaps. For this he was given money and went into the taliu, and after repeating the proper sequence of names and giving the request and going into a period of taboo, the thing was considered as inevitable. Three months later the Americans arrived.

There is an interesting variety of groups and types of people who can get him to do work, there being from just certain villages and districts, any other person or group having to route their request through channels. An individual would normally have at least a village chief with him when he wanted any help.

The total efficacy of the taliu today is only about one fourth what it must have been in the beginning. This is because some things fail nowadays and cumulative error and taboo breaking have caused the spirits to become angry. For example, after the last typhoon the Rull chiefs came in and wanted more babies. But they expected results from one session and the kans are angry when they will not come several times for anything so important. Also the Gilifith people after the storms wanted him to cause more fish. In four days the sea was swarming with fish about one inch long and people went out to eat them by the thousands. Two days later they were gone because they should have been left to grow. The kan were angry. After they grew up a lot of them should have been brought to him so that he could thank the kan.

This small sketch, while of little value as a source of detailed information, does indicate that the basic religious structure of Yap is still intact. Recalling the details from the medical section and from the part where the native idea of conception is dealt with only strengthens this view. The fact that several of the young men seemed to be impatient with magical healing methods only indicates the extent to which native magic still predominates after years of the foreigner's religion.

Its relation to outside religion--to all intents and purposes, Catholicism--is interesting. There are relatively few conversions as yet, and an even smaller group really understands the major points at issue. In almost any emergency, every person will revert to Yap magical practices. At Christian funerals, the priest will perform the rites of the Church, followed by the Yap funeral ceremony. The reason for a blend rather than the extinction of one or the other is understandable in the light of the Yap attitude.

To the natives, Yap religion and magic are pragmatic. They involve first one higher being, then another, until success is attained. It deals mainly with the present, and largely ignores the time after death insofar as ethical points are concerned. In addition, the people say magical phrases, pay to have actions and phrases said or performed at certain magical taboo spots, and the magicians get a certain amount of deference and are a little dangerous.

The Catholic religion, then, fills the gap of life after death if there is any danger here. The priest is paid for services which are remarkably similar in form to those of Yap. The great taliu of the Catholics is in Rome, and it must be very powerful to be able to set up an auxiliary taliu in Yap. Since one god might not be just right for any given thing or event, it is best to try all the good bets. In other words, Catholicism and the Yap religion complement and supplement each other to a remarkable degree. The reason why more of the people have not become Catholics is simple conservatism, and the fact that the converts have not benefited much, even though the Americans do seem to be very powerful. A Protestant missionary would have to dramatize his ceremonies considerably in order to compete successfully with either of the other two religions in Yap.

The historical changes in social organization, particularly the adjustments of the patrilineage to the constantly falling population, are processes of rather successful adaptation instead of disaster.

Today, the vast majority of patrilineages in Yap operate as units of husband, father and children, and the nuclear family coincides with the patrilineage. In this case the head of the patrilineage and the father and husband are all one person. Since many young men combine these three functions, they are without men who are old and experienced enough to act in a mediatory role of the patrilineage head. Young men who get into trouble, or who undertake some important activity, have no older man to act as an intermediary for them when they need him badly. Today, the mediatory activities of the patrilineage head are taken over, when necessary by an older man who stands in a father status most closely traceable to the younger man. Thus far, the pattern is identical with that described for the ideal patrilineage, with the one exception that the man who may act as head of the lineage is not in fact the head of the lineage, and is usually the head of another lineage and often in a different village. Hence, the personal relationship between the two is likely to be thinner, more distant, and less trustful than it used to be when the head of the patrilineage was a much closer kinsman. In one case, a young man of thirty-two asked his mother's current husband, from another village and another lineage, to act as a mediator between him and the ethnographer. In another case, a mother's father tried to smooth out an elaborate marital dispute at the request of his daughter's son.

A second dislocation has occurred as a consequence of depopulation. Women, who ideally inherit unimportant taro patches at best, and only when they are particularly good to their old parents, now inherit considerable properties and properties of considerable importance. They in turn have bequeathed property to both sons and daughters, and lacking them, to more distant relatives. As a consequence a young man who is a lineage head now owns bits of land in other villages in addition to the land of the lineage with which he associates himself. Village membership is ideally determined by land ownership within the village. When one young man was asked which village he "really" belonged to, since he owned land in three villages, he named one. This reply was countered by saying that he must really belong to all three villages, but he emphatically denied this saying that his patrilineage was in this village and this, therefore, was his village, and that the other lands were unimportant. Hence, the ideal pattern that a patrilineage is the landholding unit and that it holds land within one village has been retained despite the separate holdings which have accrued to people through the disappearance of certain patrilineages.

Another aspect of women's owning land when they never used to arises when a woman owns a piece of land which sanctions village chieftainship or magicianship. What happens is that a man can acquire these statuses by marriage now, when this never could have been the case in the past. The fusion of the statuses of district chief of Gagil and first ranking magician of the district

in the present chief (fithingmow ni ga') is a consequence of just this situation. On the whole, however, the impression has been that this situation--mobility by marriage--is statistically relatively uncommon and structurally relatively unimportant. It is unimportant because whenever such an instance occurs, the effect is not so much to disrupt the system as it is to reintegrate the system. Since marriage of persons of distant classes is strongly condemned, the mobility which any man can achieve by marriage is strongly limited; if his patrilineage did not have chiefly rights to begin with, it was at least of equal class to the patrilineage of the woman who brought that prerogative in. When a woman inherits chiefly status, it is only because there are no men to inherit it, that is, because the lineage is almost dead. Hence, when the woman brings chiefly land into the patrilineage by marriage, that patrilineage takes it over and it continues to follow the pattern already described; it has ceased to be the function of one patrilineage and has become the function of another, but it remains a patrilineage function and follows the pattern of inheritance and succession which has been described as ideal for the patrilineage. The land which a woman brings into a patrilineage by marriage does not revert to matrilineal relatives; nor does it get willed to a "best friend" or a "dear neighbor." It stays within the patrilineal line and within the patrilineage. Only if the husband dies first does this woman will it to her son or daughter, and if there is a son it will go to him.

A third consequence of depopulation has been the weakening of the father's position in relation to the disobedient son. Disowning and disinheriting have come to mean little since many sons have access to lands inherited from their mothers.

It is highly significant, however, that despite the depopulation, the structure of the patrilineage appears to be intact in its most significant functions. What has happened has been an elastic reintegration, not a brittle disintegration. The numbers of people have diminished, and with them the number of members with the patrilineages, but the definition of the roles and statuses remains, even when it is necessary to call on distant kin from remote villages to act in the capacity required by the pattern, and despite the strong hostility which is felt for people who are not of one's own village.

If one were to speculate that the high rate of divorce were the first sign of disorganization of home and family, he would be gravely in error. Viewed in terms of the whole familial pattern that is regarded as normal in Yap, this remarkable turnover in marriages seems normal and healthy. At the very most, some of the older people say that there is more running around and more divorce, but it is just a matter of degree and probably a slight degree at that.

The unit of man, wife and children is fundamental in the social structure, and is as healthily intact today as it was before, in spite of any tensions which may have developed over the past few years.

When one considers politics, he is likely at first to think that here is an area of such great meddling by everyone that the picture is completely changed from aboriginal times. That is to say, the three main districts (Gagil, Tomil and Rull) seem to be in a continual race to please and benefit from the foreign power. The other seven districts seem now as in the past to play a subordinate role. Stories of the troubles and machinations while the Germans and Japanese were on Yap seem to indicate that political maneuvering is not a phenomenon peculiar to the American administration. Aboriginally, a highly structured network of emissaries and spies, and interminable briberies, murders, feuds and jockeying for power went on. Violence was more prominent in the old days, but political conniving seems to have been as much of a preoccupation of the old days as it is now.

War as a formal pattern disappeared during the German rule. It existed in several degrees. The most severe type involved real carnage with a large loss of life. Another, more formalized and large-scale affair involved the moiety system, and there was little actual killing. This combat between the moieties still goes on in a verbal form, and accounts for the impression that one gets of great animosity that does not exist between districts.

In the old days, these moiety conflicts occurred when the two uppermost classes (<u>'ulun</u> and <u>bulche'</u>) managed to rally to their respective sides many hundreds of young fighters. The rise or fall in rank of their villages was the price for success or failure. These alliances still tend to be formed, and about the worst thing that can happen to one or more natives is to become isolated from all factional alliances.

Nowadays, naturally, the struggle is between certain men who want to head up the districts, and the struggle which they then engage in is to keep their district paramount with the governing power.

Thus, when the first Americans landed on Yap, there was an immediate demand to see the chief. Having become somehwat accustomed to this sort of request, a couple of the more astute elders framed it so that one would say he was the chief of all Yap and have the other man confirm this fact for the Americans. His reward for this would be the chieftainship of the district in which he lived. This trick worked beautifully, and was only upset when an investigation disclosed that these two men, in terms of old Yap custom, were not the rightful chiefs. Indeed, there was no chief of all Yap at all, but a relative equality of the top three. The rightful method, in general, involved, as noted in the section on social structure, the ownership of a certain sacred tract of land which was passed down in varying fashion, usually matrilineal, to the person who would become the next chief. In trying to determine who this person was and the exact method of inheritance, the greatest of confusion and lying was encountered.

On top of this matter there arose the varying interpretations of the men in charge as to what should be done with, for and to the Yaps. This brought on a tendency to make it imperative for

the successful native to be the proper sort to satisfy the particular American with whom he were dealing at the moment, and to have a suitable attitude on the subject at hand ready to be verbalized when this determination had been made.

Several examples are suitable here to illustrate this condition. The chief of one district, for example, was old in body but young in mind. He was the rightful chief without doubt and this caused no trouble. His district, however, was not one of the most powerful and he realized that fact, so he acted quietly but stubbornly to bring about some of the changes he felt would be good in the long run. These were in the nature of accepting Catholicism, using all hospital facilities, having more and better schooling, and even possibly changing the mode of dress.

This of course put him outside the pale of acceptability with most of the other district chiefs, and realizing this, he said little.

In another case there was an attempt to use one of the Americans as the means for getting one chief substituted in place of another. The aspirant was one of the most erudite men concerning certain subjects of interest, and was brought forward as a good source of information, for whose services he would later be helped in deciding about some problems he had. After a few sessions on the agreed subject, he switched to politics, and the little problem turned out to be who owned the sacred land in a certain district, and would by that ownership become chief. He explained it in such a manner that it was reasonably plausable, if he had given true names, and wanted it then explained to the men of the governing force so that he would be chief. This was handled in the best manner possible, further investigation disclosing that he had erred in certain factual matters or at least that there was a variance of his opinion from that of certain other competent people. The result was a failure to show power or influence or a refusal to use it. Never again was any information obtained from this man.

In the midst of all this business as to who would be chief, the important questions as to what each man stood for arose and received the most extensive treatment and debate. A tent had been erected in colony where meetings and discussions of Yaps, or Yaps with Americans, could be held. Here for several months there were chiefs, assistant chiefs, writer men (could take down what everyone said in Japanese) or others in what became almost a continual congress. The tactics were fairly clear in most cases and account for the prolonged meetings. Without an American to catalyze the thing nothing was decided, and when it had been to please an American, the decision meant nothing and had been reached only because it was felt that Americans tend to become angry if things aren't settled in some way every once in awhile.

The issues at stake, channeled one might say through chiefs who appeared to want change or chiefs who wanted to retain and even revive traditional Yap custom, are very nearly the core of the

problem which the extract from the quarterly symbolizes. It will pay to look at several of these.

Whether or not Yaps should have a good school system has been a question both to the Americans and to the Yaps. The Americans had an obligation to higher authority to provide some manner of schooling but the limits within which this mandate could be filled were wide. That is, the question became one of whether the Yaps were primitive, better off without schooling beyond a slight degree, whether they would just become discontented with what Yap had to offer, and even whether the Yaps wanted schools at all. This last question is the key to all the anxiety and debate. On one side were a large number of school teachers who had had varying training, all of it inadequate, plus an unknown number of men and women. It was common to characterize these loosely as the young men, but it was more a matter of the amount and kind of work that any given individual had done for the Japanese, than a matter of chronological age. The opposing faction was the old men, these being more accurately those men with a vested interest in tradition that might be injured in some way if control in some manner became a function of whether or not one had the rudiments of a formal education.

Even at the point of its highest development, the American system was in no manner comparable to that of the Japanese, and at the time of our leaving it had deteriorated strikingly.

The Americans there were divided in much the same way as the Yaps with some, usually including the education officer, being very ambitious and affected by the imagined plight of the young people, versus others who were all for preserving the old ways. These views were known and almost every person was classified as for or against schools, the treatment of these people by the Yaps then being a function of his actual or potential power in the conflict.

Side problems ranged from where the schools should be, whether only in Colony or in each district, to who should support them and pay the teachers. This last problem arose as an issue of partial self-support or paternalism.

Many long and vicious meetings were held in which the teachers would forget their role as subordinates to the chiefs, raising their voices and in other ways showing disrespect. The chiefs, more poised as a rule, would agree to anything and immediately act in a passive manner to sabotage the new proposal.

The most striking issue and the one most bitterly debated and contested, was whether or not girls could go to school after they reached menarche. The verbalized issue was that in Yap custom a menstruating women was dangerous and should be isolated. The offer to have her miss possibly a week per month was always refused, and the debate continued. Token agreement was reached many times, and as the teachers said, the old men would agree to anything if an American were there, but then not keep their word.

The crucial issue concerned the cooperative work on the school, and allocation of American material for that purpose, payment of teachers, food for teachers, enforcement of control over the pupils and community support in general instead of ostracism of the teacher and passive sabotage all round.

The actual problem here is much simpler than it appears. The teachers want schools because they are so maladjusted at any other phase of traditional Yap life that they are uneasy; other young people want schools because it is what the established people don't want, and the little school kids who are bored with many things like to have it handy to take up the day when everything else palls. The opponents to schools in general, fear that the young people will take over and become more and more able to dominate the political structure through talking with the governors. The menstruating girl taboo, they recognize as a crucial issue in the status of women, which if removed, would bring a flood of other changes. It was worth a man's reputation and future status to be on the wrong side of the fence in any one of these issues.

As to the issue of eating or not eating out of several pots, this can be divided into two parts: the one involving daily home living, and the vegum system which has certain ceremonial and magical contexts with systematic advances for those who are acceptable, and who have certain amounts of Yap money and food for a ceremony. In the first it would lessen perhaps the work of a wife, but they care little for that in general. The second is the heart of the age segregation system, acting as a reinforcing agency every time men congregate. It is a symbolic thing not usually used to give better food to the higher grades, but galling to any man who won't conform enough in the culture to advance. The more intelligent men see it as the keystone to the whole age grade system and old man rule; by attaching it to the idea of relief for women, which they know appeals to Americans, they can visualize the whole structure being carried away. They are probably correct in seeing this as a critical issue.

In all probability the issue as to whether menstruating women in general should be isolated is part of the same reasoning. It is completely different from our custom and can be made to sound very mysterious and nasty. It is part of the key to old man control, with a basis semi-magical in nature, and if it goes there is one more step taken toward being the same as Americans and one less reason left why old men who know the traditional ways are important.

The same can be said of funeral customs. If there is anything where there is real conformity on Yap it is in the strict observance of all the customs surrounding death. Many of these customs are very annoying to young people who are restricted for certain periods of time, and who are put in their place every time an old important man dies, at which time they see all the fuss that is made over his remains. There are days of sitting about, giving over of valuable Yap money to obtain which they are dependent on older men going through formal ceremony,

restrictions of movement, and for years certain attentions paid to the long dead ancestor.

As noted above, Yaps still have a strictly traditional way of dressing. It is one of the most obvious of the distinctions and one of the most embarrassing to those who have been away and gotten used to foreign dress. In addition, the Japanese urged and practically forced the wearing of certain amounts of clothing, pictures being available of men now living, in the traditional manner wearing white linen suits in Japan. The problem is rationalized in many ways by both Native and American. The native who wants change brings forth health reasons, protection of the skin and such. This rational sinks to its true level of importance when you have gone through the experience of seeing a very acculturated Yap young man wearing shorts go home to his village, to be seen by you the next day in Yap dress. The psychological shock is very apparent no matter how casually the event is treated. Or to see one of the more rabid fellows avid for every change make himself a pair of shorts out of an old pair of sailor blues and try to wear them in Yap weather, finally to give up but only after unmistakeable embarrassment followed by large amounts of aggressive behaviour, can one realize just what happens to a Yap who is really in the way of changing when conditions aren't right for change.

The seriousness with which any deviation is taken in the case of women or girls, is indicated by the fact that the three really outcast girls (sleep around and work away from the village in Colony if at all possible, while defying all efforts to force a return) wear dresses a large part of the time, and shoes if possible. The one really unforgiveable thing was the wearing of dresses, and although pressure was put on them from all sides to conform in the matter of dress, they stuck it out as if it were really the important symbolic matter at stake.

One of the most significant jibes leveled at the low caste men, who had come to work for the Americans in Colony or on the road, was that they all wore American clothing whether it was required of them or not. It was interpreted as an attempt on their part to get out from under Yap custom and, while gaining favor with Americans, to gradually become the top Yaps because they would know the language and jobs. This accusation happened to be true insofar as the actual fact of wearing clothing went, and did seem to be a sort of figurative thumbing of the nose.

In the whole problem of the caste system the only thing of seeming importance was the letting of the lower caste attend school. As a matter of fact, they were never forbidden to go in either our or the Japanese administration. This is a false issue which sounds good to the education officer. It is reasonably significant that there was no talk of abandoning the whole class structure, and that the lower caste people who wanted to get into another system, had to escape to work in Colony. Their stake in this little verbal revolution, even if successful, would be small. There was little or no sentiment on the part of the Americans over this question because all Yaps look alike and there is no apparent economic difference or suffering.

The Yap values involved were so little understood that, while servitude as such was frowned upon, the appearance of the servitude was so vague that emotion or righteous indignation was never built built up.

In addition to those noted in the revolution, there are a couple of more minor points that the more acculturated men always bring up. That is of money income, industry and American food. There is no consideration of the real problems involved, indicated by the fact that the Japanese who really tried to develop the place couldn't make it pay, and, on a purely emotional basis, the contention is made that jobs and money must be had. Various competent surveys have indicated it to be a relief proposition if any such thing is started.

In this the Americans are involved to a degree, some favoring the complete pulling out of all foreigners possible, letting the Yaps go back completely to their subsistance economy, others wanting to start something like a soap factory or oil press. At the present time there is great money poverty on Yap when compared to the days of Japan rule, when nearly everyone had a cash income of some kind, even though small in terms of purchased goods.

Critically involved, though not so often harped on to susceptible ears because of its lack of clarity and drama, is the core question of whether the old man is going to run the patrilineage and individual family, and whether young men will have the various chiefly positions.

It is clear from sections on the social structure that the oldest man is without doubt the key man, and is in almost complete control of the younger individuals. If a younger man will not knuckle under, he cannot be killed, but his whole life in the Yap value system can be cut short, and he can end up in a sort of mental and spiritual vacuum.

The clearest theme in many conversations and days of living with one young rebel is that he has no future in Yap society as it is now, and that he knows it. He can tell someone else how to tear the fabric apart, where the keystones are, and what should or should not be done first. The inevitable conclusion is that it means destroying all the controls that lodge in the old men's hands. Whatever results, whether Japanese, American or otherwise, this very reshuffling of the old rules gives the rebel his place in the world.

This disruption of culture on Yap, which seemed so violent and pervasive at first glance, is actually a fundamental fight between those who want to retain the old ways and those who want to change to Western ways. The telling difference between Yap and an island where the people sit about in black depression, however, is that Yap has an active and vigorous conflict of factions with no holds barred. In spite of the disruption, most of the major institutions are intact, sometimes in a changed form, and the one positively new element of disruption or unknown quality is the reaction of the foreigner. Consequently the natives keep him under constant surveillance, try to anticipate every move he makes, and use all their considerable psychological insight and acumen to manipulate him in their

gropings for power.

This analysis holds, however, only for the present and in no sense of the word necessitates the concept of an easy continuity of the culture over a long period without strain and anxiety to the individuals involved. In America's time on Yap there has been a consistent effort to "please the native," follow his customs, let him be the guide to any change and in general to set the scope of progress or regression rather than to give explicit rules of do or do not. There are, of course, exceptions under various administrators, but the native in spite of great confusion as to American motivation, feels that he is to be considered as somebody worth while and that in one way or another he will have some say in his fate.

This contrasts sharply with the feeling under Japanese officials who, while giving them perhaps a better economic break than our Government has, also made more arbitrary rules, decisions and made a systematic attempt to force customs that were "bad" to be dropped and customs that were "good" to be adopted. The extent of the change which was wrought can be noted in the so-called "young men" who are now so completely maladjusted in their own culture that they frantically seek a modification in line with western standards.

There is, thus, a fundamental and clear-cut difference between the administrative policies of the Japanese and of those of our Government. While there has been immense confusion in the varying interpretations of policy, at no time was there any reason for the majority of the Yap men and women of reproductive ages to feel as if there was to be the collapse of all they felt at home in, and that children would only make their lot the more difficult.

This apparent contradiction is in reality no contradiction as one might assume in summing up what is going on today. That is, there is a "revolution" in progress to demand change now. Why was not the change that the Japanese tried to force the most acceptable thing possible, and the very answer to the problem of developing a vigorous, healthy, agressive, expanding population.

The answer lies simply in the numbers and types of people involved, and the stage of acculturation at which the Yaps were caught. Thus, when the Germans came to Yap there was enough forced labor to make for a certain resentment, but they left the natives alone to the greatest extent possible insofar as customs were concerned. In addition there were no masses of Germans nor much attempt to reform food production or recruit labor in ways completely foreign to the Yap taste. The furthest step in this direction was in the assignment of quotas for copra production.

With the coming of the Japanese, all the undesirable aspects of foreign life seemed to descend. There was on the part of almost all Yaps a determination to remain a Yap secretly even at the expense of an occasional beating or stay in jail. The general.

structure of almost all the social organization persisted but in the daily life, especially for the women, there gradually developed a strain and unpleasantness that was accentuated greatly in proportion to the number of children in the family.

The most important aspect of this strain came in terms of the simple supply of food for a family. Almost every man and woman was required to contribute in some way to goods that could be exchanged for cash money, and which would over a period of time help to make Yap self-supporting in the Japanese Empire. Since there was no economic arrangement sufficient to allow the majority of the workers to buy enough food from their earnings, it was necessary that women work in their gardens at a faster pace, and at times of the day when they did not want to. It soon became evident that the women with little children or babies had a much harder job than one without.

A man could see the same thing as he had to go to his work or fill his quota of export goods, and in spite of his natural inclination to want children in the family he became willing not to have them and thus to have it a bit easier getting a lot more service out of his wife for his own purpose.

The situation of the worker is identical now on Yap, the difference being, however, that such a small proportion of the total Yap population is working for our government, and that no production quotas are forced. It is a matter now of providing a few highly prized luxuries, working at your own pace and own inclination. The worker arranges with family and relatives for food and exchanges part of his earnings for this service.

Another obvious consideration which might be overlooked is that if a woman has more children, she is going to spend more time at the hospital than otherwise. As the Japanese doctor put it, if the natives do not come in while they are sick, the body will be brought in for autopsy. The great reluctance with which our medical services were accepted, and the great strides in conquering fear that have since been made, demonstrate clearly that a wise policy has been put into operation.

In contrast to this situation, the "revolution" now is a purely technical matter of deciding the future influence of one political faction in Yap. It is a competitive and fairly clear-cut issue in which the Yap people feel quite at home. While the apparent bitterness and confusion are great, if the members are carefully analyzed for status and participation, it immediately becomes clear that only a few of the more maladjusted participants are going to be badly hurt or cast into the depths of despair, while the rest of the population takes a relatively passive part. The idea is always under the surface that the Americans can always be manipulated, and that there is some sort of satisfactory adjustment on the way if only the people are let alone to work it out.

If one needs an explanation of why more children have been born in the American administration than before, it seems likely that Yap has felt a sense of relief from pressure which had grown acute

during the later war years. Young men, who had been herded onto Japanese farms during the war, are now married and active participants in family life.

It is not impossible even to see this increase in the birth rate as a result of greater freedom from the pregnancy taboos of child spacing as a result of having no children during the war years. However, as the demographic data clearly indicate, the rate of increase is not so extraordinary as to demand elaborate explanations. The population profile clearly shows that there is now an unusual concentration of women within the reproductive ages. It is possible, too, that a greater stability of family life, desire for children, and freedom from abortions are all expressions of a renewed spontaneity and cultural vigor which has emerged since the repressive Japanese have been replaced by the tolerable Americans.

At any rate, the island is certainly no such place as has been characterized in the former literature, where the native sits about in the depths of despair and waits for the inevitable extinction of himself and his village. There may have been difficult times in Yap during the epidemics and war years, but nothing much has happened thus far except for a fairly orderly adaptation of the cultural patterns to fewer available people. To attempt to make more out of the psychological effects of the depopulation would not be profitable without further study.

It is not evident that traumatic hardship has destroyed the toughness or reproductive capacity for the Yap people. It is not impossible, however, that the pragmatic adaptations which they might ultimately have to make to our administration might lead them to having fewer and fewer children. If better standards of health and high morale are achieved among the islanders, however, their response might be precisely the opposite.

## V. CONCLUSIONS AND RECOMMENDATIONS

In attempting to reach a conclusion from the data of this report, it will be well to restate the basic hypothesis which has determined both the selection of material and its order of presentation. That is, population control has been in effect for a long time in Yap. It probably held the population within the limits necessary for subsistence on the island. This supposes a moderate birth rate and a moderate death rate, resolved into a combination which resulted in a larger number of people than there are today. When Europeans first occupied Yap, there was a rapid upswing in the death rate which led to a drastic falling off in numbers. This higher death rate probably continued less markedly until the end of the Japanese occupation period. The point has now been reached where there is a fairly low death rate and a birth rate which is high relative to the death rate.

The means of population control have been shown to be based on the two mechanisms of abortion and low coital frequency. The motivation for abortion has been established in the concept of prolonging childhood freedom and a reluctance to assume the responsibilities of a parent. The means by which children hinder this continuance of adolescence is clear in the pressure brought to bear on the young parents to stay married if children are born, instead of wilfully divorcing the spouse on the slightest pretext of boredom or incompatibility.

The actual number of abortions which can be documented is small because, while there is little reluctance to discuss abortion as such, only the rarest of women will ever admit to having had one. This pattern of secrecy is not rare on Yap, and is not thought to be at all unusual in this particular context.

Yap women readily discuss their desire for a small family and relative freedom, however. This fact gives some hint as to the motivation which has formed a basis for the probable widespread practice of abortion. It was probably widely known among the aboriginal Yap people, but at that time was used only to the extent necessary to achieve a satisfactory sort of relationship between people and resources. The important factor for consideration is the motivation for its continued and probably accelerated use.

Women may have come to see the advantages of no family at all or of a small total family, quite independent of the new vistas being opened through contact with the outside Western world. The other possibility is that as the Germans began to make demands on native labor and interfere to a greater extent with native institutions, the trend started. Its acceleration was probably going on during the Japanese occupation period, probably coming to a head during the war and just preceding.

It is clear, in any case, that the natives had small families or none at all. Since abortion was the only major flexible means to achieve this end, it is very probable that it was used.

For coital infrequency, there is no need to see the motivation in terms of a revolt against Yap ways. A few young men were so affected by prolonged contact with the Japanese that there is little hope for them in the conventional patterns of Yap life. They must rebel, emigrate, change and in many other ways express the restlessness that comes when one does not fit where one is forced to stay.

The pattern of infrequent sexual intercourse, on the other hand, seems old. It is based on an anxiety which comes from the belief that intercourse is debilitating, and further expressed by the relatively difficult relationship of lovers in overt expressive behavior. One not improbable explanation of this difficulty is that formerly, when the mispil was available in the club house, as a part of an honored and respected institution, there was a more "normal" amount of sexual intercourse. This institution would have acted as a very effective form of contraception and would probably have fitted well with infrequent affectionate behavior and sexual intercourse with the wife. In these circumstances, it is even possible that love affairs with various girls might have served primarily for getting a wife. With the breakdown of the mispil institution as an overt pattern, there may have been a substitution of what the natives though to be more in line with Western ideas, or it may simply have been a result of trial and error in the solution of this essential conflict.

If the present pattern of unstable sexual affairs is a substitute for the mispil system, it is manifestly a failure, as shown by the constant turnover in marriages and the openly expressed difficulties in love and sexual relationships with the wife. It almost seems as though the Yap people have tried to do the right thing in terms of missionary and Western ideas and have paid a large price in terms of feelings of insecurity. Or it may be that the etiology is quite different and something about which we know nothing.

There may be a few men in Yap who are so sensitive to social pressure that, through psychosomatic mechanisms, they will not breed or are rendered sterile. This is too tenuous a matter to be dealt with here, and is felt to be a minor factor at best.

The symbolic importance attached to sexual behavior is manifest in the restrictions which are usually imposed during any activity that is considered to be at all important. This pattern is particularly conspicuous in the numerous sexual taboos which are imposed in workaday contexts, and even to a greater extent during religious activity.

These two mechanisms of infrequent coitus and abortion can easily account for a controlled birth rate, and seem to reinforce one another. The infrequent coitus and taboos keep the number of pregnancies relatively low while the techniques of abortion take care of unwanted pregnancies. Abortion is messier than contraception, but about as effective.

The death rate initially must have been high as a result of contact with foreign diseases after the time of first contact

with the civilized world, and only began to abate when the foreign administrators began to offer medical services to the natives.

The extent to which venereal disease might have affected the birth rate has been explored asfar as possible with the resources available. It is still the main unknown factor, although all evidence of extensive infection is absent now. It deserves careful attention in the future, however, if a complete answer to depopulation is desired. No one actually knows how widespread some deviant form of venereal disease might be, and most of the medical evidence presented anywhere is an educated guess at best. This statement holds equally well for all other debilitating disorders of the reproductive systems of both sexes.

The part which deterioration of the body as a result of diet can have played in the depopulation is probably not very significant.

The trend today is hopeful, but it is based on a very short time interval, and is considered not to be decisive. With things as they are, the population decline will be at a lessening rate over the next decade. The only radical change that can be anticipated to make the situation radically better would be for the people to react to present conditions in such a way that the number of conceptions would greatly increase and that these pregnancies would not be terminated by abortion.

This discussion can be summarized in the following chart:

A Summary of Yap Depopulation

| | Spanish Times 1885-1899 | German Times 1899-1914 | Japanese Times 1914-1945 | American Times 1945-1948 |
|---|---|---|---|---|
| Deaths | High | Declining | Further decline | Moderate |
| Factors in Deaths | Epidemics | German medical measures | Japanese medical measures | American medical measures |
| Births | Moderate | Declining | Further decline | High |
| Factors in Births | Undisrupted social conditions | Distrubed social conditions and onset of abortion pattern. | Distrubed social conditions and peak of abortions. | Probable peak in percentage of women in reproductive ages and great reduction in abortions. Possibly more lax coital taboos. |

A Summary of Yap Depopulation (con't)

| | Spanish Times 1886-1899 | German Times 1899-1914 | Japanese Times 1914-1945 | American Times 1945-1948 |
|---|---|---|---|---|
| Relationship of deaths and births | Unknown | Constant throughout with births less than deaths | | Radically changed in that births greater than deaths |
| Population change. | Unknown | Steady decline at a constant rate. | | Slight increase |

The recommendations which it was felt possible to make are these:

In the field of medical research, as an aid to the correct evaluation of what needs to be done to the natives to further improve their health, the continued need for caution and deference to Yap custom is the primary factor to be considered. Although native living habits are unsanitary and the people do not always get treatment which might help them, it is essential to make progress slowly. If examinations were forced and inspections became frequent nuisances, the program will meet with great resistance and will collapse of its own weight without the continuous application of force. If, on the other hand, good facilities are available, it will not be very many years before most Yaps will make extensive use of them. The long days of indoctrination of the Yaps as to the efficacy of modern medicine have paid off to a large extent and the next steps should be much easier.

Most specifically, this means that unless absolutely willing and full cooperation can be obtained from the people, examinations necessary to determine the extent of venereal diseases should not be attempted. The Yap reaction to Japanese forced examinations are only now being neutralized. The fact that in only a few instances did an individual expose his or her genitalia, and that the fear of an "X-ray" camera nearly upset the somatotyping program, bespeaks the extreme modesty of the Yap people and their anxiety about such matters.

The statement that the one radical trend which could take place depends on the willingness of the Yaps to produce more conceptions and not terminate them through abortion, is probably correct. How to make such conditions come into being so that these phenomena will emerge is one of the great unknowns.

Some opinion would have it that the changes contemplated in the "revolution" should be immediately backed and put into effect. This would supposedly improve morale, add an incentive to rear large families and bring the people into closer contact with the outside world. Its effect would be primarily on younger men and women who are manifestly the least indoctrinated in Yap ways and

who are probably the least happy in the traditional scheme of things.

Other opinion has it that any such move would so disrupt the fabric of Yap culture that all that could result would be chaos and bitter feeling among the various factions thus formed.

What is probably correct is that our administrators should steer a strictly neutral course in the "revolution." So far, the conservative group has won part of the battle and the change minded faction has won the other. The political fortunes of these groups have ebbed and flowed with the varying administrations.

What has apparently happened is that at no time has the administrator been truly neutral. Many times he has thought himself to be, but even at that moment the staff, which in the long run must put the directives into action, has been split in two by taking one side or the other. In general, people who are interested and who make vigorous attempts to do anything, invariably seem to be ego involved and, while still obeying the letter of the law, neutralize or change it in its effect.

The natives sense this, and play one man off against the other. It is nearly impossible to avoid having this happen but, if it is recognized that this is the way Yaps play, then some of the ensuing conflict at an administrative level can be kept on a more conscious level, and more of the differences ironed out on a rational basis.

These two procedures, which in themselves caution against giving over too abruptly to whims of either the native or the administrator, will probably do more to keep the present Yaps alive and foster more births than will any other program of action or inaction.

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